WOODSTOCK

SHOP FOX®

INTERNATIONAL

MODEL W1669 and W1670 RADIAL DRILL PRESS

INSTRUCTION MANUAL

Phone: 1-360-734-3482 • On-Line Technical Support: tech-support@shopfox.biz

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WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE OR FORM WITHOUT THE WRITTEN APPROVAL OF WOODSTOCK INTERNATIONAL, INC.

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WARNING

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks, cement, and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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INTRODUCTION

About the W1669 and W1670 Radial Drill Presses

The **SHOP FOX®** Model W1669 and W1670 Radial Drill Presses have been specially designed by Woodstock International, Inc. to provide many years of trouble free service. Close attention to detail, ruggedly built parts and a rigid quality control program assure safe and reliable operation.

The Model W1669 and W1670 Radial Drill Presses are capable of a wide variety of drilling and sanding operations. Purchasing the D2677 Drum Sander Set and D2722 Mandrel allows you to sand small or finely detailed pieces. The tilting table and headstock allows surfaces to be sanded and drilled at many different angles. The Model W1669 and W1670 is packaged with a drill chuck, motor and paddle switch with removable safety key.

Woodstock International, Inc. is committed to customer satisfaction in providing this manual. It is our intent to make sure all the information necessary for safety, ease of assembly, practical use and durability of this product be included.

Woodstock Technical Support

We stand behind our machines! In the event that questions arise about your machine, parts are missing, or a defect is found, please contact Woodstock International Technical Support at 1-360-734-3482 or send e-mail to: **tech-support@shopfox.biz**. Our knowledgeable staff will help you troubleshoot problems and send out parts for warranty claims.

If you need the latest edition of this manual, you can download it from **http://www.shopfox.biz**.
If you still have questions after reading the latest manual, or if you have comments please contact us at:

Woodstock International, Inc.
Attn: Technical Support Department
P.O. Box 2309
Bellingham, WA 98227

Specifications

Motor Type:	TEFC Capacitor Start Induction
Motor:	1/2 HP, 110V, 5 Amp., Single-Phase / 60 Hz
RPM:	1725
Power Transfer:	V-Belt Drive
Bearings:	Shielded & Lubricated Ball Bearings
Switch:	Toggle ON/OFF Switch, w/ Safety Lock Key
Spindle Travel:	3-1/4"
Maximum Distance, Spindle to Base:	W1669 = 15-1/2," W1670 = 49"
Maximum Distance, Spindle to Table:	W1669 = 9-1/4," W1670 = 31-1/2"
Overall Height:	W1669 = 31-1/2," W1670 = 64-1/2"
Head Tilt:	45° Left, 90° Right
Table Tilt:	90° Left and Right
Table Rotation:	360°
Spindle Taper:	JT-33
Swing:	34"
Chuck Size:	5/8" (1-13mm JT-33), Keyed
Speeds:	5, Belt Controlled
Range of Speeds:	550, 880, 1570, 2490, 3470 RPM
Drilling Capacity:	1/2" Diameter in Steel
Approximate Shipping Weight:	W1669 = 100 lbs., W1670 = 150 lbs.

SAFETY

READ MANUAL BEFORE OPERATING MACHINE
FAILURE TO FOLLOW INSTRUCTIONS BELOW WILL RESULT IN PERSONAL INJURY

⚠DANGER Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

⚠WARNING Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.

⚠CAUTION Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury and damage to the machine. It may also be used to alert against unsafe practices.

NOTICE This symbol is used to alert the user to useful information about proper operation of the equipment.

Standard Safety Instructions

1. **Thoroughly read the instruction manual before operating your machine.** Learn the applications, limitations and potential hazards of this machine. Keep manual in a safe, convenient place for future reference.

2. **Keep work area clean and well lighted.** Clutter and inadequate lighting invite potential hazards.

3. **Ground all tools.** If a machine is equipped with a three-prong plug, it must be plugged into a three-hole electrical outlet or grounded extension cord. If using an adapter to aid in accommodating a two-hole receptacle, ground the adapter using a screw to a known ground.

4. **Wear eye protection at all times.** Use safety goggles with side shields or safety goggles, meeting the national safety standards, while operating this machine.

5. **Avoid dangerous environments. DO NOT** operate this machine in wet or open flame environments. Airborne dust particles could cause an explosion and severe fire hazard.

6. **Ensure all guards are securely in place** and in working condition.

7. **Make sure switch is in the "*OFF*" position** before connecting power to machine.

8. **Keep work area clean;** free of clutter, grease, etc.

9. **Keep children and visitors away.** All visitors should be kept at a safe distance away while operating unit.

10. **Childproof your workshop** with padlocks, master switches, or by removing starter keys.

11. **Disconnect the machine when cleaning, adjusting, or servicing.**

12. **DO NOT force the tool.** The machine will do a safer and better job at the rate for which it was designed.

13. **Use correct tool. DO NOT** force machine or attachment to do a job for which it was not designed.

14. **Wear proper apparel. DO NOT** wear loose clothing, neck ties, gloves, jewelry; and tie back hair.

15. **Remove adjusting keys and wrenches.** Before turning the machine on, make it a habit to check that all adjusting keys and wrenches have been removed.

16. **Use proper extension cord.** When using an extension cord, make sure it is in good condition. When extension cord is 100 feet and less in length, use those that are rated Standard Service (grade S) or better, and that have a conductor size of 16 AWG. A drop in line voltage, loss of power and overheating can result when using an undersized cord. The extension cord should have a ground wire and ground plug pin, as well.

17. **Keep proper footing and balance** at all times.

18. **DO NOT leave machine unattended.** Wait until it comes to a complete stop before leaving the area.

19. **Perform machine maintenance and care.** Follow lubrication and accessory attachment instructions in the manual.

20. **Keep machine away from open flame.** Operating machines near pilot lights and/or open flames creates a high risk if dust is dispersed in the area. Dust particles and an ignition source may cause an explosion. **DO NOT** operate the machine in high risk areas, including but not limited to, those mentioned above.

Additional Safety Instructions for Drill Presses

1. **DRILL PRESS SPEEDS.** Always operate your drill press at speeds that are appropriate for the drill bit size and the material that you are drilling.

2. **DRILLING HOLES.** Feed the drill bit evenly into the workpiece. Back the bit out of deep holes and clear the chips with a brush after you have turned the machine off.

3. **USING THE CORRECT DRILL BITS.** Use only round, hex or triangular shank drill bits, and make sure the drill bit you are using is tightened properly..

4. **SAFE MAINTENANCE.** Never do maintenance or change speeds with this machine plugged in.

5. **USING SERVICEABLE TOOLS.** Never use tools that are in poor condition. Cutting tools that are dull or damaged are difficult to control and may cause serious injury.

6. **DRILLING OPERATIONS.** Never hold a workpiece by hand while drilling, never drill sheet metal unless it is clamped securely to the table, and always secure the workpiece to the table before drilling.

7. **SECURING A WORKPIECE.** Properly position workpieces to avoid drilling into the table.

8. **PROTECTING YOUR EYES.** A face guard used or safety goggles is recommended.

9. **WORKING HABITS.** Habits – good and bad – are hard to break. Develop good habits in your shop and safety will become second-nature to you.

Avoiding Potential Injuries

Figure 1. Never drill while holding the workpiece by hand.

Figure 2. Keep fingers away from spinning drill bits, cutters, and sanding surfaces.

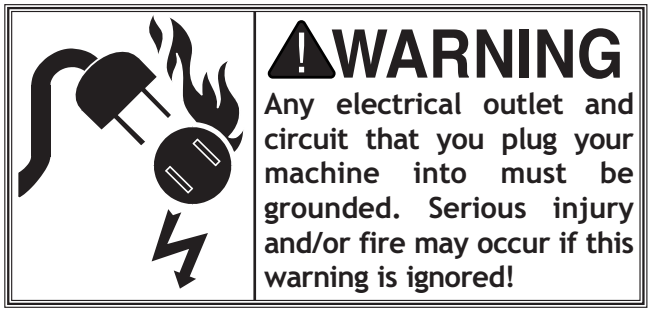
Figure 3. Remove switch safety key when not in use.

ELECTRICAL

110V Operation

The **SHOP FOX®** W1669 and W1670 Radial Drill Presses operate at 110 volts only. The motor supplied with your new drill press is rated at 1/2 HP and will draw approximately 5 amps. When choosing an outlet for this machine, consider using one with a 15 amp circuit breaker or fuse. Keep in mind that a circuit being used by other machines or tools at the same time will add to the electrical load being applied by the drill press. Add up the load ratings of all machines on the circuit. If this number exceeds the rating of the circuit breaker or fuse, use a different outlet.

DO NOT modify an existing low-amperage circuit by only replacing the circuit breaker with a breaker rated for a higher amperage. The breaker and the complete circuit must be replaced by a qualified electrician.


WARNING
Any electrical outlet and circuit that you plug your machine into must be grounded. Serious injury and/or fire may occur if this warning is ignored!

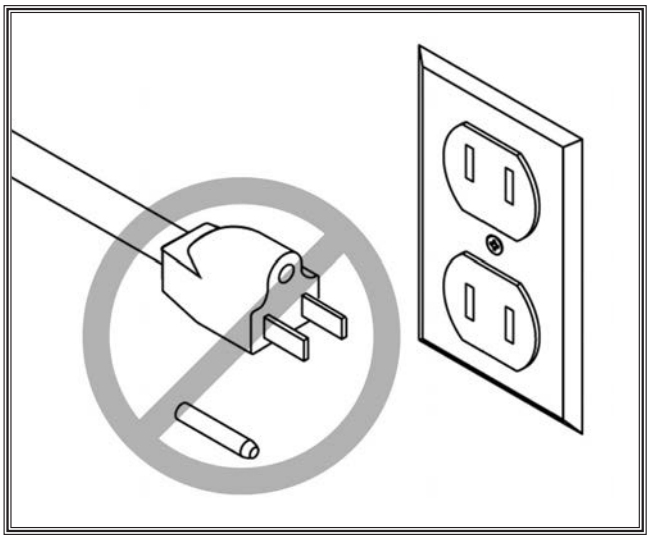


Figure 4. Never remove a grounding pin.

Extension Cords

If you must use an extension cord, use the guidelines below to determine the correct cord length and gauge. If you use an undersized-gauge extension cord or one that is too long, heat will generate in the cord and fire or circuit damage may result.

- **Use a cord rated for Standard Service (Grade S)**
- **Use a cord that is 16 gauge and 100 feet or less**
- **Use a cord with a ground wire and pin**
- **Use only undamaged cords**

Grounding

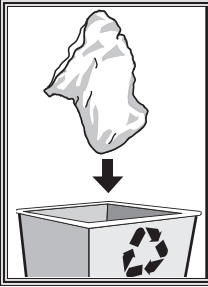
Ground this machine! The electrical cord supplied with the W1669 and W1670 Radial Drill Press comes with a grounding pin. **DO NOT** remove the pin if your outlet does not accept a ground pin, see **Figure 4**. Have the outlet box replaced by a qualified electrician or have an appropriate adapter installed.

Remember, an adapter with a grounding wire does not guarantee the machine will be grounded. A ground source must always be verified in the electrical circuit within the wall or conduit.

ASSEMBLY

Use the list below and **Figure 5** to inventory your shipment before beginning assembly. If any parts are missing, call Woodstock International, Inc. at 360-734-3482 or tech-support@shopfox.biz.

While the main components of the **SHOP FOX®** W1669 and W1670 Drill Presses are assembled at the factory, some assembly is required. The following order of procedures is the recommended sequence.



⚠WARNING

SUFFOCATION HAZARD!
Immediately discard all plastic bags and packing materials to eliminate a suffocation hazard for children and animals.

⚠WARNING

EYE HAZARD!
Wear safety goggles during all assembly procedures. Otherwise serious personal injury may occur!

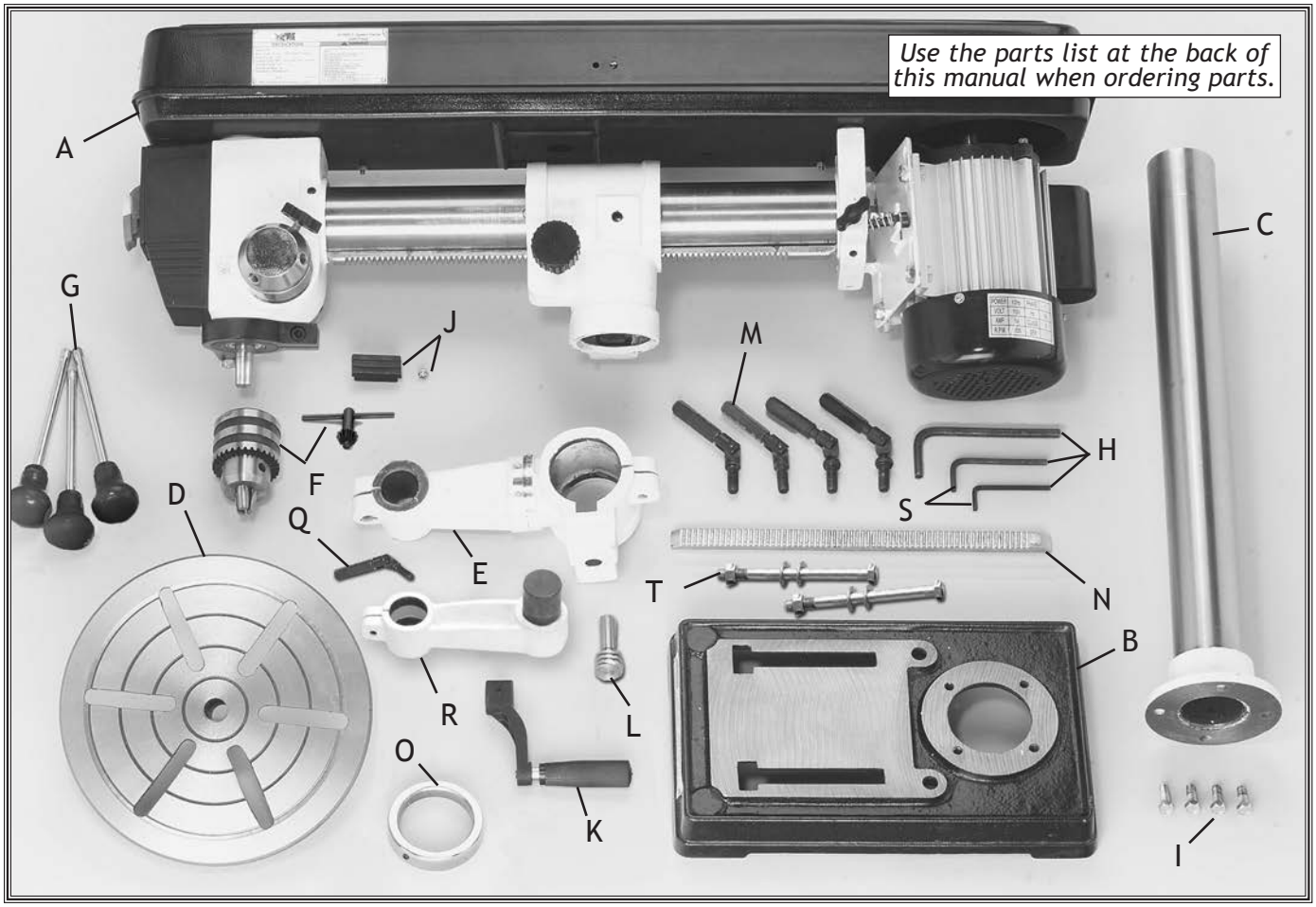


Figure 5. Component inventory.

- **A.** Headstock Assembly
- **B.** Base
- **C.** Column
- **D.** Table
- **E.** Table Bracket Assembly
- **F.** Drill Chuck and Key
- **G.** Spindle Handles and Knobs (3)
- **H.** W1669: Hex Wrenches 3MM, 5MM, 10MM
- **I.** Column Bolts (4)
- **J.** Belt Cover Knob and Screw
- **K.** Lift Handle Crank
- **L.** Pinion Gear
- **M.** Lock Handles (4)
- **N.** Rack
- **O.** Column Ring
- **P.** Open End Wrench (Not shown)
- **Q.** W1670: Lock Lever
- **R.** W1670: Table Support Arm Bracket
- **S.** W1670: Hex Wrenches, 3MM and 5mm
- **T.** Mounting Hardware (Refer to the parts list on **Page 30** for details)

Base and Column

For maximum stability, secure the W1670 floor-model drill press to a sturdy surface like a floor or a 4' x 4' x 3/4" piece of plywood. For the W1669 bench-model, secure it to a sturdy workbench or tool table.

1. **UNPLUG THE MACHINE!**

   - **If installing the W1670 to a concrete floor, do these steps:**

   a. Position the drill press in a sensible work area where the base sits flat at all four corners, or the base may crack when you tighten the fasteners.

   b. Mark and drill the floor, and install the concrete anchor bolts (not included) (see **Figure 6**).

   c. Position the base and fasten the base to the floor carefully as not to crack it.

   - **If installing the W1670 to a plywood base, do these steps:**

   a. Center the drill press base along the back edge of the 4' x 4' x 3/4" sheet of plywood (see **Figure 7**).

   b. At each corner of the drill press base, drill the plywood.

   c. Secure the base to the plywood with four 3/8" diameter bolts, washers, and nuts (not included).

   - **If installing the W1669 to a tool table or workbench, do these steps:**

   a. Position the base on a bench or tool table capable of supporting approximately 100 lbs.

   b. Drill two mounting holes (**Figure 8**), and secure the base to the table with the two supplied carriage bolts and wing nuts.

2. Place the column on the base, and install the four column bolts supplied.

⚠WARNING

TIPPING HAZARD!

Never mount a drill press to a mobile base. Mount the drill press base to a sturdy surface or the drill press may tip and cause injury.

Figure 6. Secure base to floor.

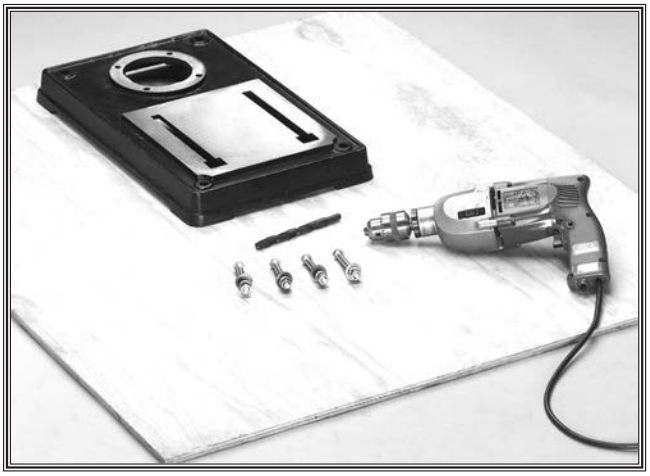


Figure 7. Secure base to 4' x 4' x 3/4" plywood.

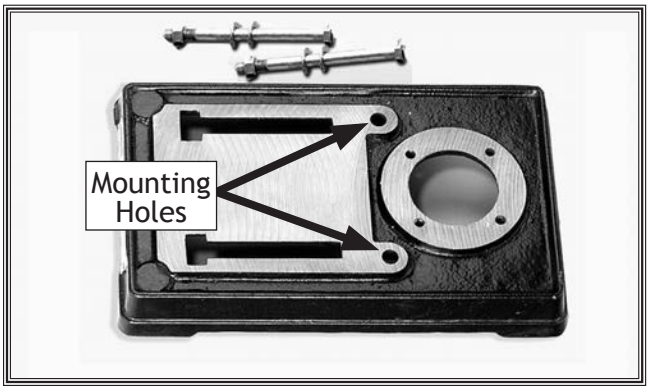


Figure 8. Workbench mounting holes.

Table Support

The W1669 comes with a one geared table bracket. The W1670 comes with a geared table bracket and table support arm, which allows the distance between the column and table to be adjusted. No table support parts are interchangeable between the two drill presses.

To install the table support assembly, do these steps:

1. Insert the table lock lever through the un-threaded hole (see **Figure 9**) in the table bracket, and then tighten the lever into the threaded side exactly three turns.

2. **S**tarting with the pinion gear, insert the shaft into the table bracket and mesh the teeth with the worm gear as shown in **Figure 9.**

3. Align the set screw in the crank handle with the flat pad on pinion shaft.

4. Tighten the 3mm set screw to lock the handle in place (see **Figure 10**).

5. Examine the rack and note that the rack teeth at one end are cut closer to the end of the rack than the other.

6. Insert the rack through the table bracket so the end that has the rack teeth cut closer to the end is pointing down (see **Figure 11**).

7. Hold the rack against the worm gear and slide the table bracket and rack onto the column (see **Figure 11**).

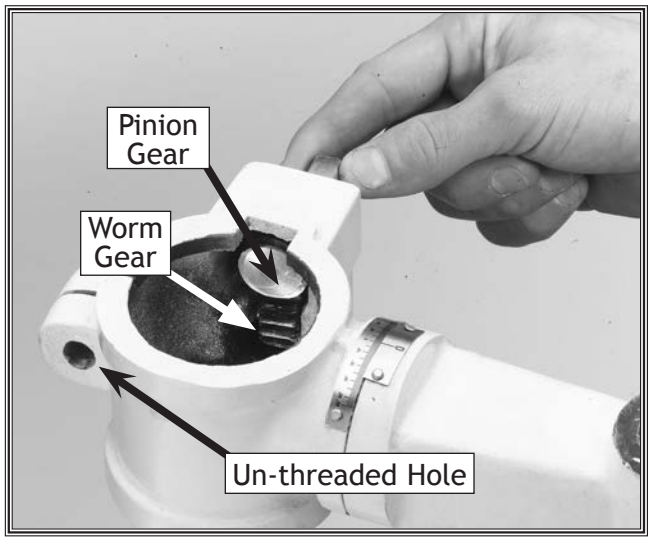


Figure 9. Pinion and worm gear installation.

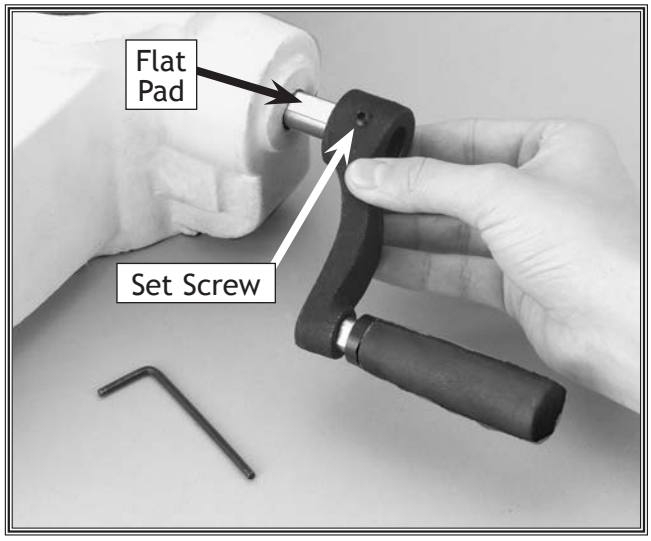


Figure 10. Align set screw with flat pad on pinion.

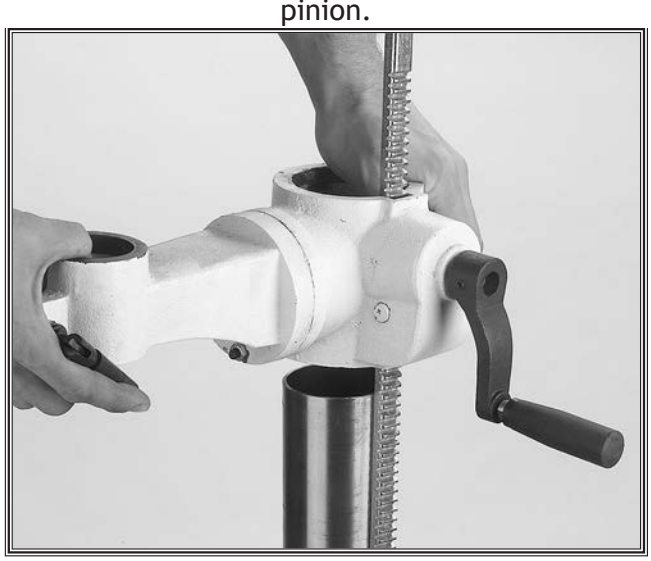


Figure 11. Installing rack and table bracket.

8. Seat the rack tapered-point into the bevel that is cut into the column support tube (see **Figure 12**).

9. Slide the column ring onto the column with the inside bevel in the down position until the rack tapered-point seats into the bevel (see **Figure 13**).

10. Position the column ring so the table bracket and rack can just rotate around the column without binding.

11. Carefully, snug the set screw to hold the column ring in place. Over-tightening the column ring will distort or split the column ring.

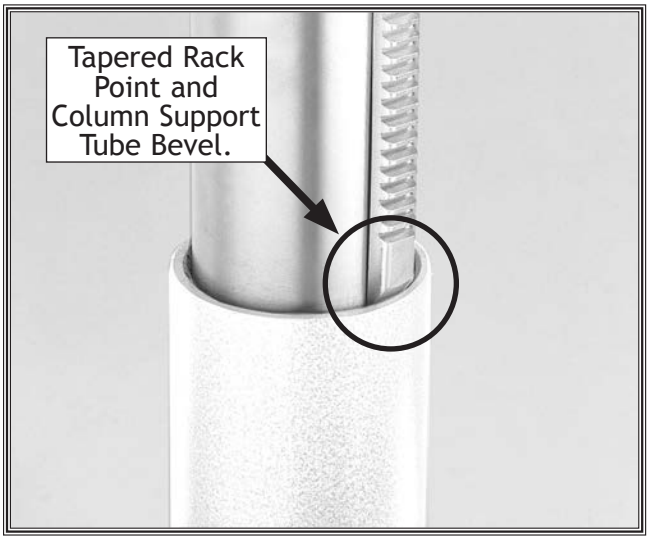


Figure 12. Bevel and rack seated correctly.

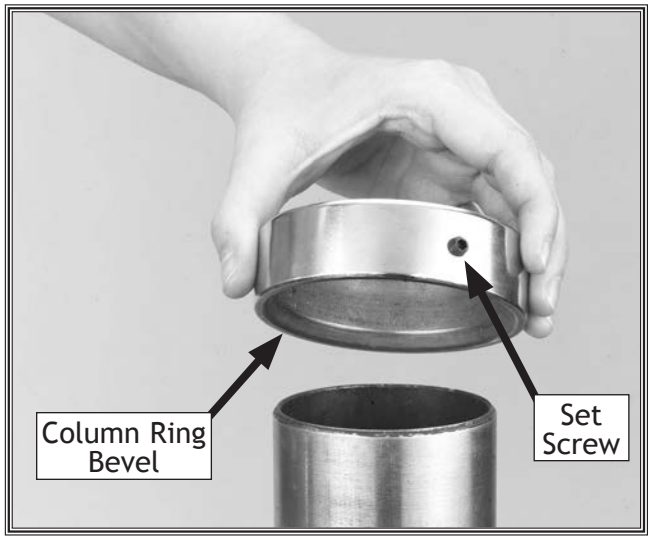


Figure 13. Column ring in the correct position.

Headstock

The headstock is secured with a set screw so it is aligned with the drill press base for balance and weight distribution. **DO NOT** over tighten the set screw, or you will bend the column or strip the threads.

⚠CAUTION

GET help to lift the headstock, or you may seriously hurt your back or drop the headstock.

To install the headstock assembly, do these steps:

1. Place the locking gib into the recessed pocket on the inside of the column bracket casting (see **Figure 14**).

2. With an assistant, lift and position the headstock pocket over the column and allow the headstock to slide down until the column fully seats into the headstock (approximately 2", see **Figure 15**).

3. Rotate the headstock directly over the foot of the base as viewed from the front of the drill press.

4. Screw in the two lock handles on the sides of the headstock.

5. Using a plumb bob and ruler, center the headstock with the base, and tighten the two set screws to secure the headstock to the column (see **Figure 16**).

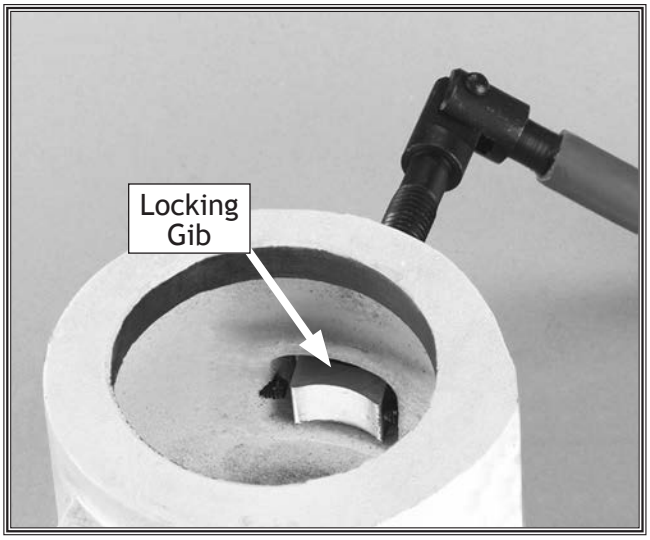


Figure 14. Locking gib installation.

Figure 15. Headstock-to-column installation.

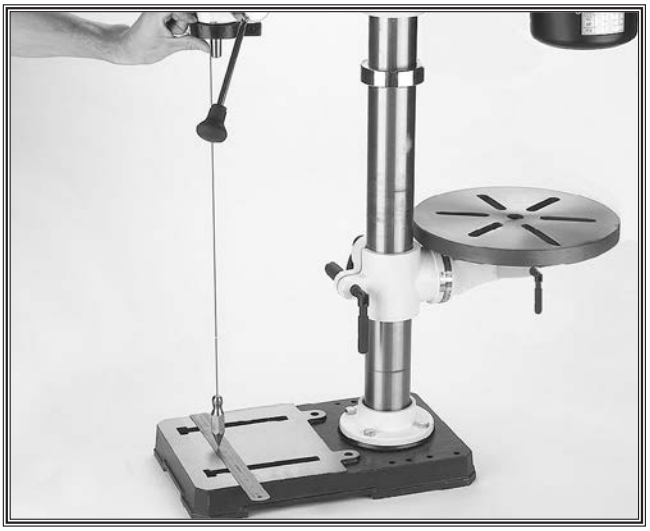


Figure 16. Aligning the headstock.

Drill Chuck and Spindle

Your keyed drill chuck attaches to the drill spindle. When properly joined, the JT-33 tapers on the spindle and inside the chuck create an almost permanent connection.

To install the drill chuck, do these steps:

1. Clean the drill chuck and spindle with mineral spirits and follow all safety warnings on the container (see **Figure 17**).

   Note: Failure to clean the tapered mating surfaces of the spindle and drill chuck may result in a loose or wobbly chuck.

2. Use the provided chuck key to adjust the jaws of the chuck until they are inside of the drill chuck body (see **Figure 18**).

3. Place the drill chuck on the spindle and tap the chuck onto the spindle with a block of wood or a dead-blow hammer (see **Figure 18**). **DO NOT** use a metal hammer to seat the drill chuck onto the spindle!

Figure 17. Clean the chuck before installation.

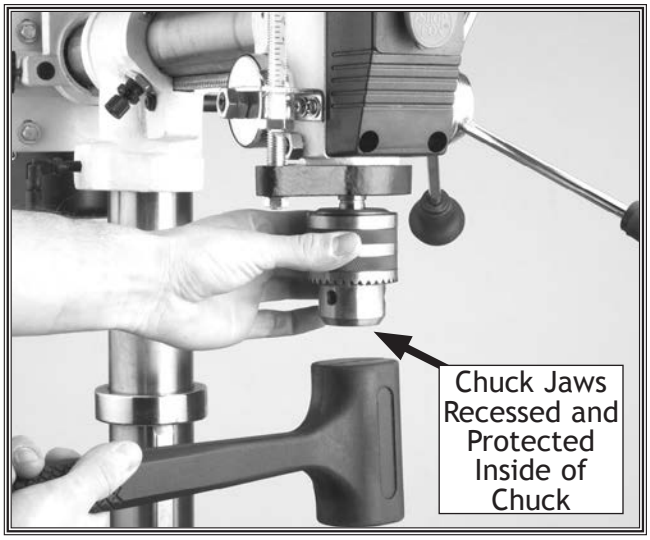
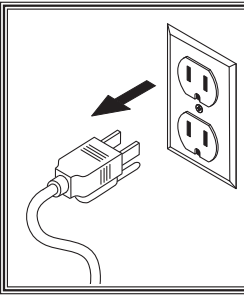


Figure 18. Seating chuck into spindle.

ADJUSTMENTS

Belt Tension

During the life of your drill press you will use different belt and pulley combinations. No matter which pulley combination you use, make sure that the belt is tensioned properly



⚠WARNING

UNPLUG the drill press before any assembly, adjustment, maintenance, or belt changing procedures. Otherwise serious personal injury may occur!

To adjust the drive belt tension, do these steps:

1. **UNPLUG THE DRILL PRESS!**
2. Open the belt safety cover (see **Figure 19**).
3. Loosen both motor lock knobs at the side of the headstock (see **Figure**).
4. Slide the motor away from the headstock until the belt is taut.
5. Hold the motor in position, and tighten the lock screw, and make sure the belt deflection gap is correct when pinched together between the pulleys (see **Figure 21**).
   - If the gap between both inner sides of the belt is greater or less than 3/4" repeat **Steps 3-5** until the deflection gap is 3/4".
   - If the deflection gap is 3/4" the belt is tensioned correctly.
6. Close the belt safety cover.

Figure 19. Open belt safety cover.

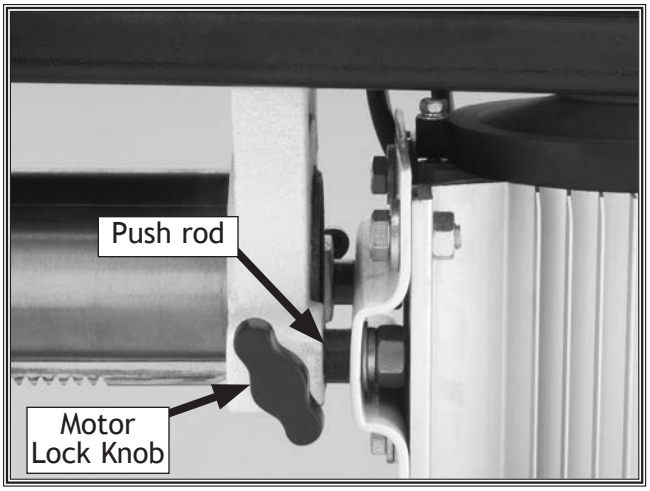


Figure 20. Motor lock knob.

Figure 21. Measuring belt deflection.

Feed Shaft Spring Tension

The feed shaft return spring is adjusted at the factory; however, during the life of the drill press you may want to adjust the feed shaft return spring to a greater tension for a stronger quill return.

⚠WARNING

WEAR safety goggles and gloves when adjusting the feed shaft spring. Serious injury may occur if this warning is ignored!

To adjust the feed shaft spring tension, do these steps:

1. **UNPLUG THE DRILL PRESS!**
2. Wipe off any oil on the spring-lock cover so it will not slip when you hold the cover from spinning (see **Figure 22**).
3. Make sure the quill is completely seated and the depth stop reads zero.
4. Put on thick leather gloves, and hold the spring cover against the side of the headstock so the cover stays splined with the locking lug; remove the jam nut and loosen the cover nut approximately 1/4" (6.4mm).
5. Pull the cover outward just enough to disengage the spring-cover lock slot from the locking lug (see **Figure 23**).
6. Rotate the cover counterclockwise to increase spring tension, or let the cover slowly unwind in the clockwise direction to reduce spring tension (see **Figure 23**).

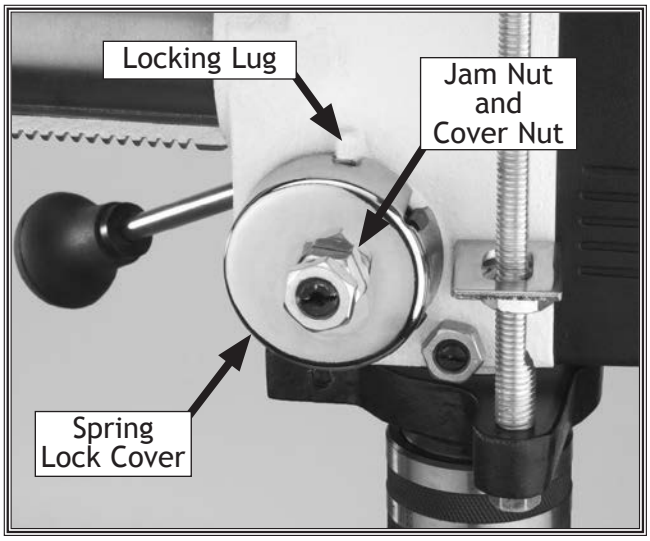


Figure 22. Feed shaft return spring assembly.

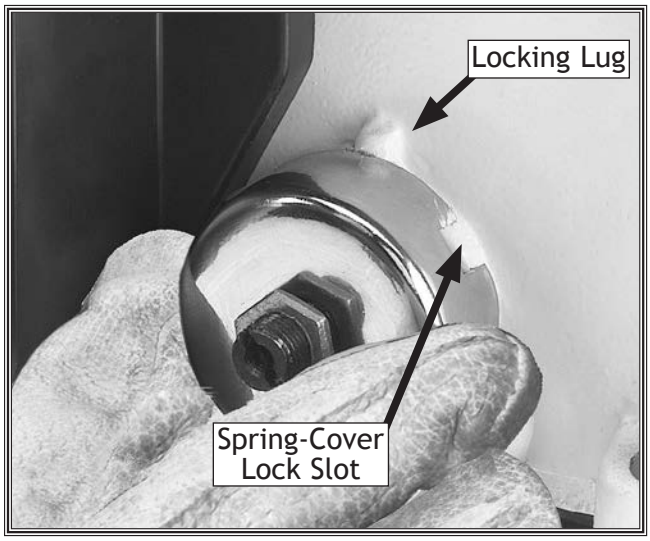


Figure 23. Typical spring cover lock slot and locking lug.

7. Engage the next available spring-cover lock slot with the locking lug and hold the spring lock cover tightly against the side of the headstock (see **Figure 24**).

8. Snug the cover nut against the spring cover just until the nut stops, and then back-off the nut approximately 1/3 turn, or just enough so there is no binding anywhere along spindle travel path.

9. Hold the cover nut and tighten the jam nut against the cover nut.

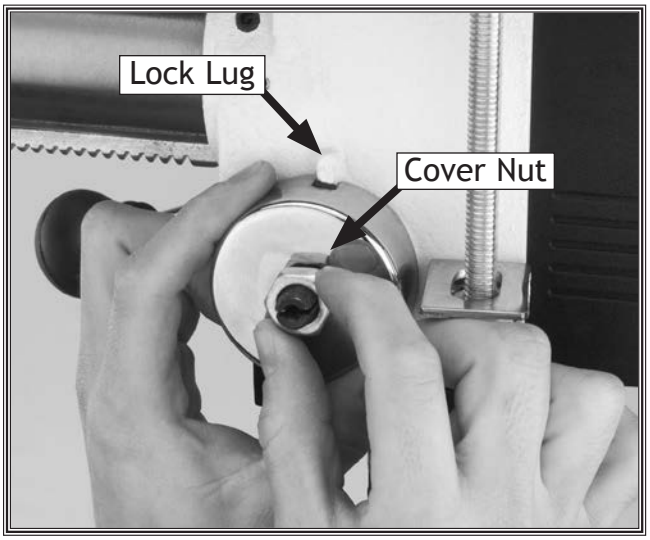


Figure 24. Hold the spring cover tightly.

Quill-Shaft Screw

While you may never have to adjust the quill-shaft screw, you should understand its function and know how to adjust it should you ever need to remove the quill for cleaning. This screw prevents the quill from rotating during drilling and sanding procedures, and if adjusted incorrectly, the quill may have lash or bind.
To adjust the quill-shaft screw, do these steps:

1. **UNPLUG THE DRILL PRESS!**

2. Clean and lubricate the quill shaft with a thin coat of light oil, so the quill travels freely (see **Figure 25**).

3. Loosen the jam nut (see **Figure 26**).

4. Move the quill up and down through the entire range of travel, and turn the quill-shaft screw inward as far as it can go without binding the quill.

5. Tighten the jam nut, and check the quill movement for binding or play while moving the quill up and down through its entire range of travel.

6. Re-adjust the quill-shaft screw as required.

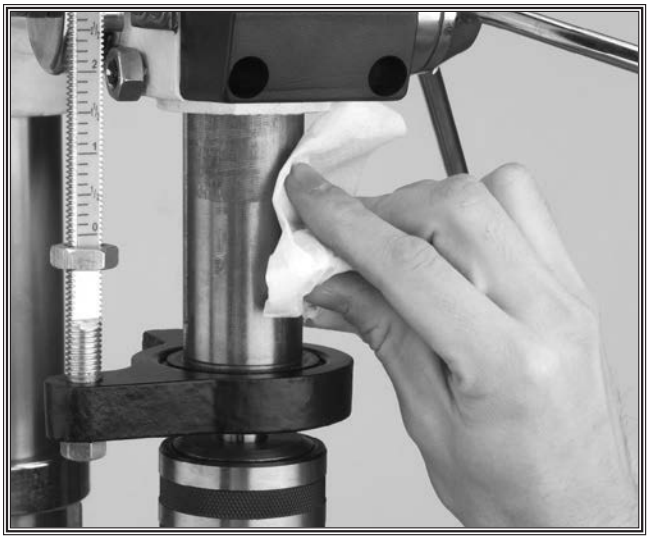


Figure 25. Clean and oil quill shaft.

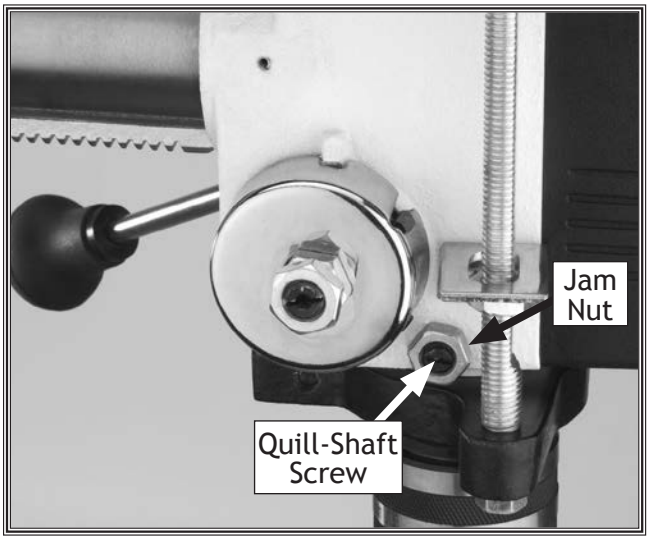


Figure 26. Quill-shaft screw and jam nut.

Table

The table can be adjusted for height, rotation, and angle. The W1670 adds the fourth adjustment of table distance from column.

Note: Table or table support parts are not interchangeable between the W1669 and the W1670 drill presses (see **Figures 27 and 28**).

To adjust the table, do these steps:

1. Loosen the table lock lever.
2. Turn the hand crank to raise or lower the table.
3. Tighten the table lock lever.
4. For the W1670, loosen the table tilt lock bolt (see **Figure 29**); or for the W1669, loosen the cap screw.
5. Turn the index pin draw nut clockwise and draw the index pin out of the casting until you can rotate the table to your desired angle (see **Figure 29**).

   Note: Use this index pin only for indexing the table to the "Zero degree" position.

   Note: To index the table back to the zero position, back off the draw nut, turn the table to zero, tap the index pin back into the casting, and tighten the table tilt lock bolt.
6. Tighten the tilt table lock bolt or cap screw, and double check your angle.

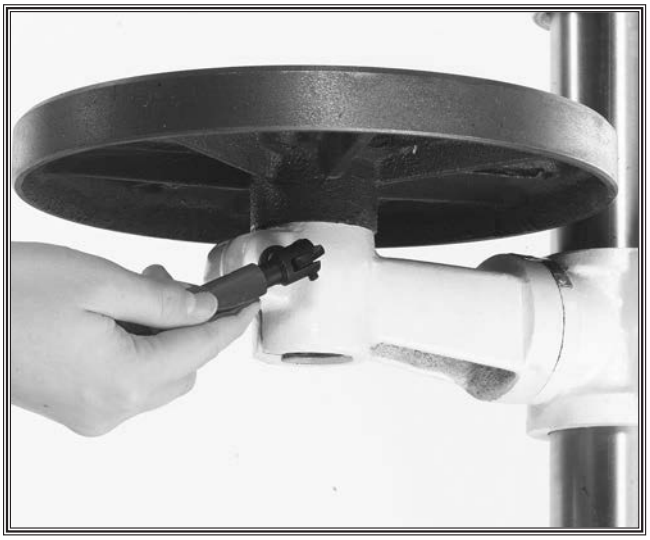


Figure 27. W1669 Table support assembly.

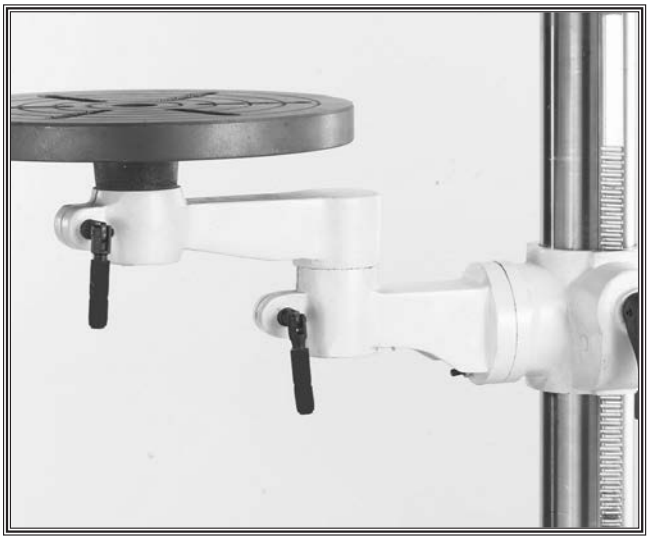


Figure 28. W1670 Table support assembly.

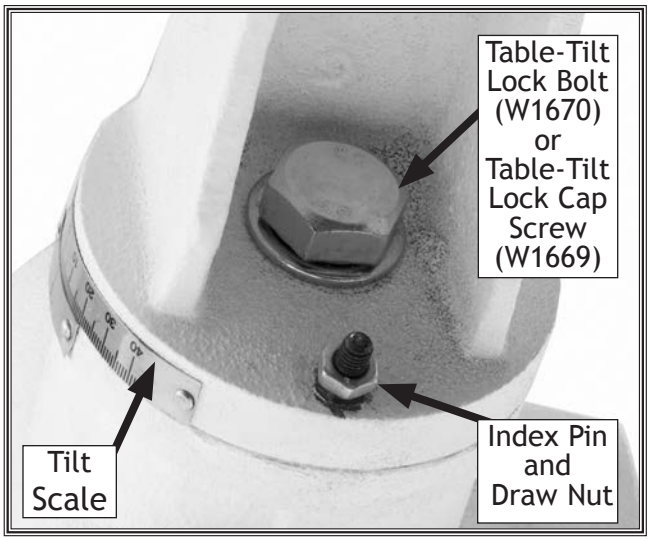


Figure 29. Tilt mechanism and lock bolt.

OPERATIONS

Test Run

This drill press will perform many types of operations that are beyond the scope of this manual. Many of these operations can be dangerous or deadly if performed incorrectly.

The instructions in this section are written with the understanding that the operator has the necessary knowledge and skills to operate this machine. If at any time you are experiencing difficulties performing any operation, stop using the machine!

If you are an inexperienced operator, we strongly recommend that you read books, trade articles, or seek training from an experienced lathe operator before performing any unfamiliar operations. Above all, your safety should come first!

⚠WARNING

WEAR safety goggles and a respirator during drilling or sanding operations. Otherwise serious personal injury may occur!

⚠WARNING

Keep your shop "Child Safe." Always remove the switch safety key when drill press is not in use. Serious injury may occur.

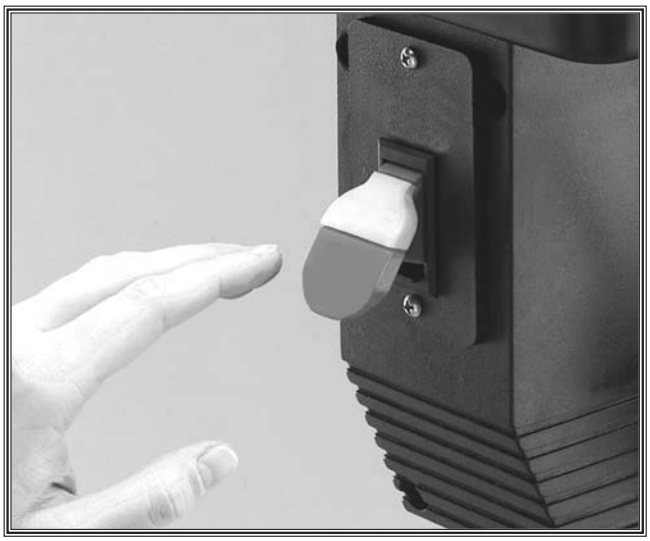


Figure 30. Fingers poised near the stop switch.

To start the drill press, do these steps:

1. Make sure the starting switch paddle is down for ***OFF***.

2. Make sure all fasteners and lock handles are tight.

3. Make sure the drill chuck key is removed.

4. Plug in the power cord.

5. Lift the ***ON/OFF*** switch to start the drill press, and make sure that your fingers are poised near the paddle, as shown in **Figure 30.** In case there is a problem you can turn the drill press off.

6. Observe and listen to the drill press, it should run smoothly, with little or no vibration or rubbing noises.

   - If you hear strange or unusual noises, shut the drill press ***OFF***, and wait for the spindle to stop moving.

7. Unplug the drill press and refer to the **"Troubleshooting"** table on **Page 27** to help isolate and correct the problem before using the drill press again.

Headstock

To drill wide workpieces up to 34" in diameter, you can slide the headstock in and out to increase the distance between the drill chuck and the column up to 17". You can also tilt the headstock from 45° clockwise to 90° counterclockwise for drilling angled holes or for horizontal boring machine use. Using the slide and tilt features, you can drill a line of straight or angled holes without the need to reposition your workpiece after drilling each hole.

To use the headstock-sliding feature, do these steps:

1. Loosen the lock lever located on the right side of headstock (see **Figure 31**).

2. Turn the slide knob to move the headstock back and forth to desired position and then tighten the lock lever (see **Figure 31**).

To use the headstock-tilting feature, do these steps:

Note: If the scale is not calibrated, set the table to zero degrees, zero the headstock with the table, and then reposition the scale to zero degrees.

1. Loosen the lock handle on the right side of headstock (see **Figure 31**).

2. Pull out the guide pin knob located on the left side of the headstock and rotate the pin knob 90° so the pin stays disengaged from the horizontal column (see **Figure 32**).

3. While reading the tilt scale, tilt the headstock to your desired angle and tighten lock lever (see **Figure 31**).

4. Drill your workpiece.

5. Loosen lock handle located on the right side of headstock, and tilt the headstock to zero and move the guide pin back into the guide slot.

6. Tighten the lock lever.

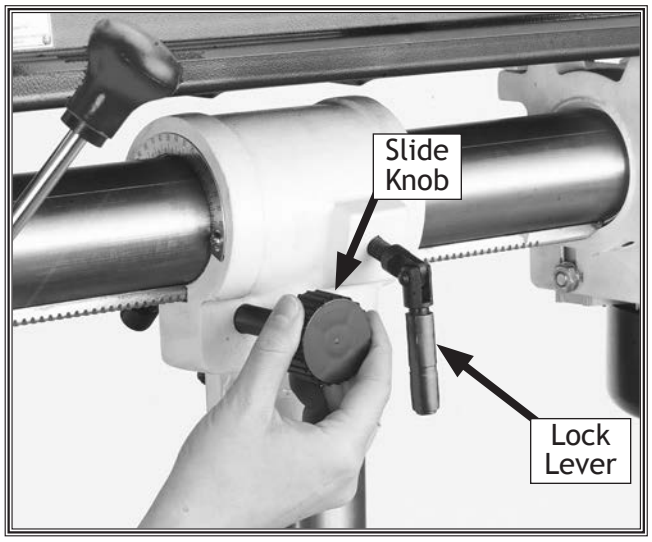


Figure 31. Headstock tilt and slide controls.

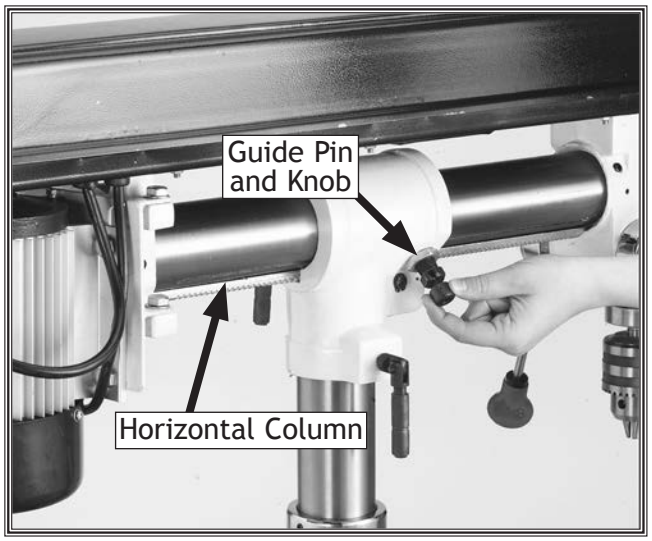
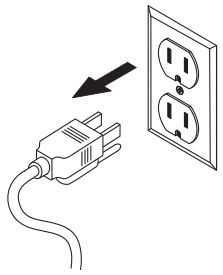


Figure 32. Headstock guide pin and knob.

Changing Drill Bits

The chuck supplied with your W1669 or W1670 drill press accepts drill bits from 1/32" to 5/8". Follow the steps below to safely swap drill bits or sanding spindles.



⚠WARNING

TURN OFF and UNPLUG the drill press, and wait until all working parts are stopped before you attempt to change drill bits. Otherwise, severe injury may occur!

To change a drill bit or sanding drum, do these steps:

1. **UNPLUG THE DRILL PRESS!**
2. Use the chuck key to remove the old drill bit, and open the chuck wide enough to accept the new bit or the sanding drum mandrel (see **Figure 33**).
3. Install the bit or mandrel so the chuck jaws will grab as much of the bit or mandrel shank as it can.
   - If you are installing a small drill bit, make sure it is held between three jaws instead of only two, and NEVER allow a chuck to grab the fluted body of drill bits.
4. Using any of the three key locations, tighten the chuck with the chuck key and **remove the key** (see **Figure 34**).

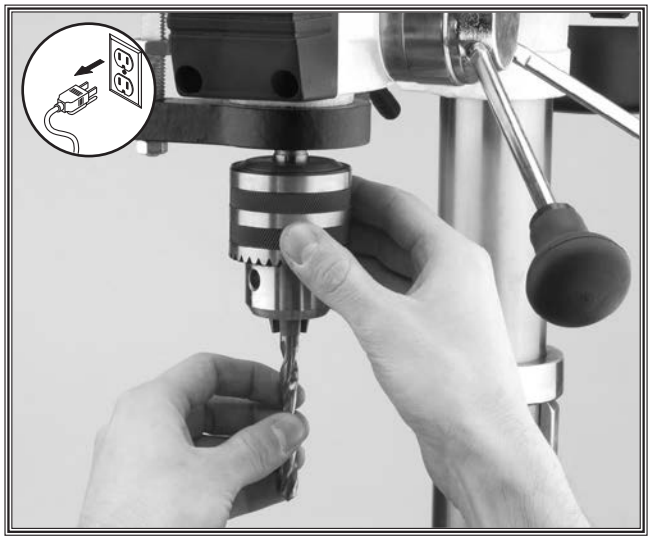


Figure 33. Installing a drill bit.

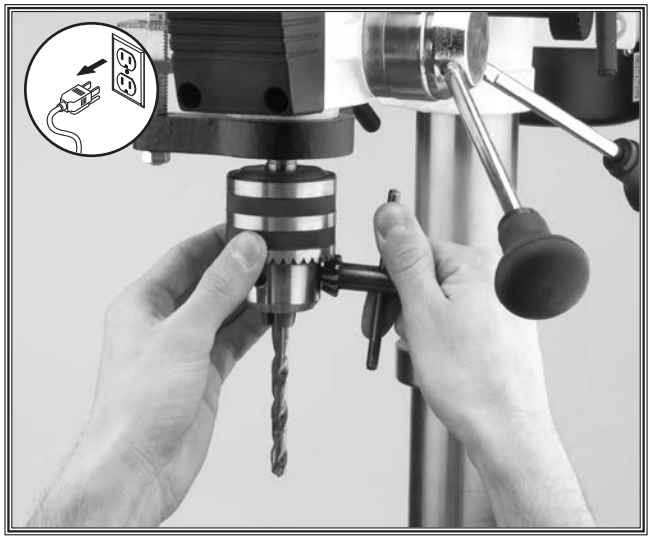
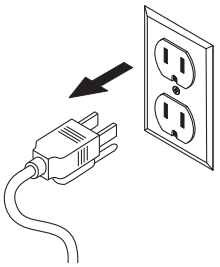


Figure 34. Using the chuck key.

Speed Changes

The Model W1669 and W1670 Radial Drill Press has 5 speeds ranging from 550 to 3470 RPM. To find your needed drilling speed and pulley combination, refer to the speed chart located under the belt guard; or go to **Page 22** and refer to the **Drill Press RPM Chart**.



⚠WARNING

UNPLUG the drill press before changing speeds to avoid accidental start up. Failure to do this may result in serious personal injury.

To change the drilling speed, do these steps:

1. **UNPLUG THE DRILL PRESS!**
2. Loosen the belt tension lock knobs on the side of the headstock (see **Figure 35**).
3. Locate the desired speed on the chart and move the V-belt to the desired V-grooves on the motor and spindle pulleys (see **Figure 36**).
4. Push the motor inward, and move the V-belt to the right spot.
5. Push the motor toward the back of the headstock. The motor support rod is spring loaded and will follow the motor. Tighten the lock knob when the right tension is achieved.
6. Close the cover.

⚠WARNING

Never operate drill press with belt cover in the open position. Your hand may become trapped in a belt and serious personal injury will occur.

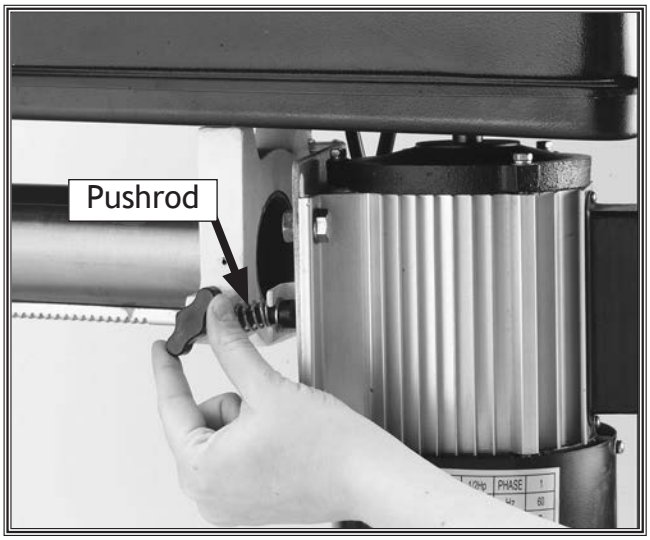


Figure 35. Loosening lock knob.

Figure 36. Adjusting belt to desired speed.

Drill Press RPM Chart

Use **Figure 37** to select the optimum motor-to-spindle pulley ratio for drilling, cutting, and sanding operations. for example the above figure shows the belt in the C position on the spindle pulley and the #3 position on the motor pulley, which will give a speed of 1,520 RPM. Refer to the **Drill, Cutter, and Saw RPM Chart** on **Page 23** for suggested tool RPMs.

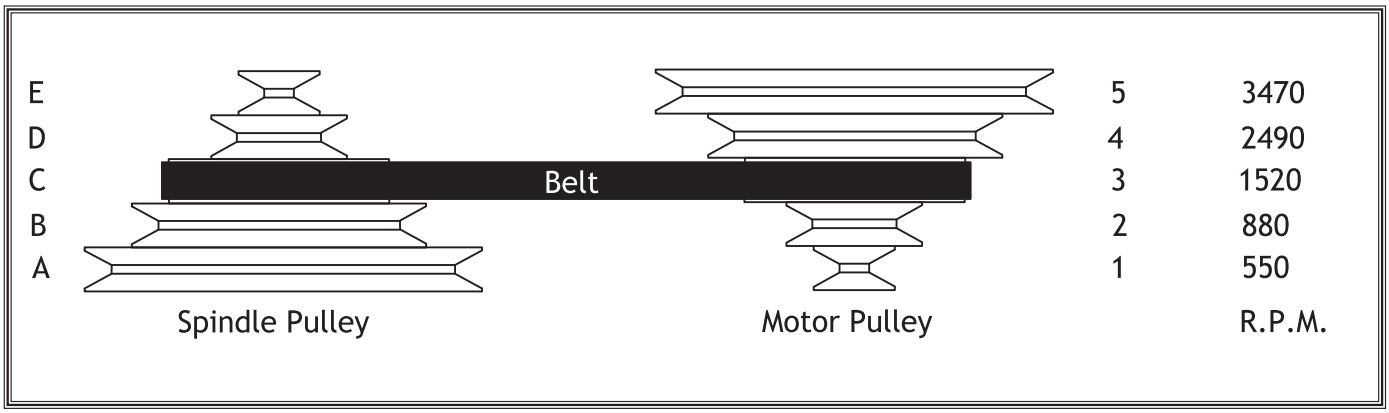


Figure 37. Drill Press RPM Chart.

Drilling Depth

Your new drill press comes fitted with a depth stop that allows drilling many holes at a pre-set depth consistently. When the hex nuts are set, the nuts will contact the stop flange and stop the drill press from drilling any deeper.

To adjust the drilling depth, do these steps:

1. Measure the maximum depth that you want to drill a series of holes at. In this example the maximum depth is 1 1/4" deep.
2. Loosen the hex nuts shown on the depth stop and align the lower nut to the 1 1/4" mark on the depth stop rod (see **Figure 38**).
3. Hold the lower hex nut and tighten the upper hex nut so both nuts are locked together.
4. Make sure the depth has been set correctly, measure, or drill a hole into scrap wood before drilling into any workpiece.

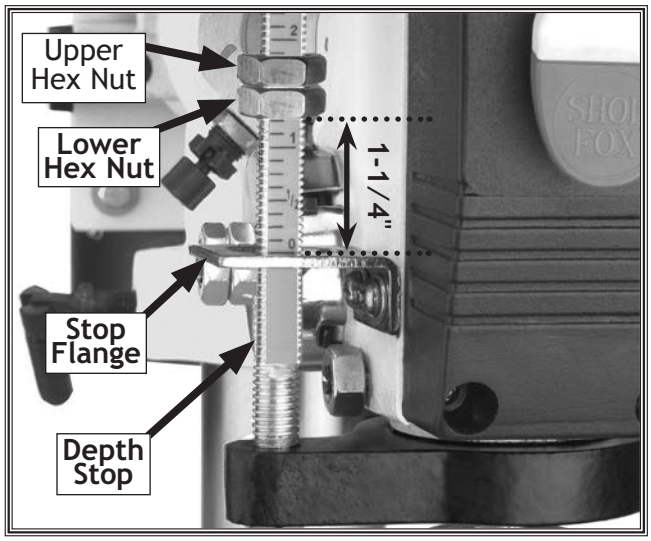


Figure 38. Depth stop set for 1 1/4" drilling depth.

Drill, Cutter, and Hole Saw Suggested RPM Chart

ALWAYS follow the drill, saw, or cutter manufacturer's recommended RPM specifications. **ALWAYS** wear safety glasses. **DO NOT** use your drill press to exceed the drilling, cutting, or sawing RPM or the feed rate of your bit or cutter. Otherwise serious personal injury can occur.

The RPMs listed below are merely suggestions to help you use your drill press in the event that you cannot find a basic starting RPM point. The final RPMs may differ based on the material drilled, the pressure you apply, and the cut-quality needed. Remember, even if the RPM and all other settings are correct, cooling the tool with a lubricant and drilling a pilot hole may also be required. Refer to **WARNINGS and TIPS**, trade journals, training manuals, and other educational resources for in-depth instructions and safety knowledge.

For current product line, refer to: http://www.steelex.biz/drilling.cfm.

Sanding Sleeves or Grinding Bits	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1", 1-1/2", 2"	2000	1725	1000	3100	3100	3100
Twist Type Drill Bits: (Wood, Plastic, and Metal)						
1/16" to 3/16"	3000	3000	2500	3000	3000	3000
1/4" to 3/8"	3000	1500	2000	1200	2500	1000
7/16" to 5/8"	1500	750	1500	750	1500	600
11/16" to 1"	750	500	-	400	1000	350
Spade Drill Bits: (Wood)						
1/4" to 1/2"	2000	1500	-	-	-	-
5/8" to 1"	1750	1500	-	-	-	-
1-1/8" to 1-1/2"	1500	1000	-	-	-	-
Spade with Spur Drill Bits: (Wood and Plastic)						
3/8" to 1"	2000	1800	500	-	-	-
Brad Point Drill Bits: (Wood and Plastic)						
1/8"	1800	1200	1500	-	-	-
1/4"	1800	1000	1500	-	-	-
3/8"	1800	750	1500	-	-	-
1/2"	1800	750	1000	-	-	-
5/8"	1800	500	750	-	-	-
3/4"	1400	250	750	-	-	-
7/8"	1200	250	500	-	-	-
1"	1000	250	250	-	-	-
Forstner Drill Bits: (Wood and Plastic)						
1/4" to 11/16"	2400	1600	250	-	-	-
3/4" to 1-1/16"	1800	1200	250	-	-	-
1-1/8" to 1-7/16"	1200	800	250	-	-	-
1-1/2" to 2-1/8"	600	450	-	-	-	-
2-1/4" to 3-1/8"	480	250	-	-	-	-
Multi-Spur Drill Bits: (Wood)						
2-1/8" to 4"	250	250	-	-	-	-
Countersink Cutters: (Wood, Plastic, and Metal)						
2-Flute Cutter	1400	1400	-	-	-	-
5-Flute Cutter	1000	750	750	250	250	250
Plug Cutters: (Wood)						
3/8" to 1/2"	1200	1000	-	-	-	-
5/8" to 1"	800	600	-	-	-	-
Carbide Rosette Cutters: One-Piece Shear Type (Wood)						
2-1/2" to 3"	1800	500	-	-	-	-
Rosette Cutters: Replaceable Carbide-Knife Type (Wood)						
2-1/4" to 3-1/8"	350	250	-	-	-	-

WARNINGS and TIPS

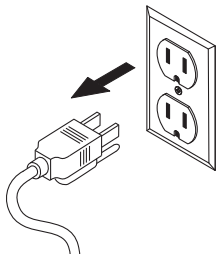
- **WARNING**: The larger the drill bit or hole saw and the slower the RPM, the greater the chance the tool could aggressively grab the workpiece, damage the tool and workpiece and cause injury. High RPMs can melt plastic, burn wood, and dull the tool.
- **WARNING**: Use a 5-Flute cutter when cutting into plastics, brass, aluminum, and mild steel. A 2-Flute cutter can aggressively grab the workpiece and damage the tool.
- **TIP:** To increase the life of drill bits, cutters, hole saws, and improve cut quality, use a lubricant equivalent to these:
  Plastics: use a soapy-water lubricant
  Brass: use a water-based lubricant
  Mild Steel: use an oil-based lubricant
  Aluminum: use a paraffin-based lubricant
  Cast Iron: use a pipe-thread cutting lubricant
  Wood: use no lubricant.
- **TIP:** Raise the drill bit, cutter, or hole saw often to clear chips and cool the tool.
- **TIP**: When drilling plastics with spade bits, use a spade bit with spurs.
- **TIP**: Plug cutters and rosette cutters are for wood only; however, carbide-tipped bits and cutters cut at a higher RPM, and can cut materials other than wood depending on cutter type. Carbide makes better cuts and lasts longer than HSS steel.
- **TIP:** When using hole saws, apply firm and even pressure, so the saw teeth contact the surface all at the same time-not at an angle. You can also flip the workpiece and finish drilling from the other side.
- **TIP:** To prevent drill bit wandering, use a center punch to start the drill bit.

Saws: Bi-Metal Hole Saws (Most Materials)															
Hole Saw Diameter	Soft Wood	Hard Wood	Plastic	Mild Steel	Cast Iron	Brass	Aluminum	Hole Saw Diameter	Soft Wood	Hard Wood	Plastic	Mild Steel	Cast Iron	Brass	Aluminum
9/16"	1150	870	1320	580	400	790	900	2-7/8"	240	180	275	120	80	160	180
5/8"	1100	825	1250	550	365	730	825	3"	230	170	260	115	75	150	170
11/16"	1000	750	1140	500	330	665	750	3-1/16"	220	165	250	110	75	150	170
3/4"	920	690	1050	460	300	600	690	3-1/8"	220	165	250	110	70	140	165
13/16"	850	635	970	425	280	560	635	3-3/16"	210	155	240	105	70	140	165
7/8"	780	585	890	390	260	520	585	3-1/4"	210	155	240	105	70	140	155
15/16"	740	555	845	370	245	495	555	3-5/16"	200	150	225	100	70	130	155
1"	700	525	800	350	235	470	525	3-3/8"	200	150	225	100	65	130	150
1-1/16"	650	480	740	325	215	435	480	3-7/16"	200	150	225	100	65	130	150
1-1/8"	600	450	685	300	200	400	450	3-1/2"	190	140	215	95	65	130	145
1-3/16"	570	430	650	285	190	380	425	3-9/16"	190	140	215	95	65	120	145
1-1/4"	550	410	625	275	180	360	410	3-5/8"	190	140	215	95	60	120	140
1-5/16"	520	390	595	260	175	345	390	3-11/16"	180	135	205	90	60	120	140
1-3/8"	500	375	570	250	165	330	375	3-3/4"	180	135	205	90	60	120	135
1-7/16"	480	360	545	240	160	315	360	3-13/16"	180	135	205	90	60	120	135
1-1/2"	460	345	525	230	150	300	345	3-7/8"	180	135	205	90	60	120	135
1-9/16"	440	330	500	220	145	290	330	4"	170	130	195	85	55	110	130
1-5/8"	420	315	475	210	140	280	315	4-1/16"	170	130	195	85	55	110	120
1-11/16"	410	310	465	205	130	260	295	4-1/8"	160	120	180	80	55	110	120
1-3/4"	390	290	445	195	130	260	295	4-3/16"	160	120	180	80	55	110	120
1-13/16"	380	285	435	190	125	250	285	4-1/4"	160	120	180	80	55	100	120
1-7/8"	360	270	400	180	120	240	270	4-5/16"	160	120	180	80	55	100	120
2"	340	255	385	170	115	230	255	4-3/8"	160	120	180	80	50	100	120
2-1/16"	330	245	375	165	110	220	245	4-7/16"	150	110	170	75	50	100	105
2-1/8"	320	240	365	160	105	210	240	4-1/2"	150	110	170	75	50	100	105
2-3/16"	310	230	355	155	105	205	240	4-9/16"	150	110	170	75	50	95	100
2-1/4"	300	225	340	150	100	200	225	4-5/8"	150	110	170	75	50	95	100
2-5/16"	290	215	330	145	100	195	225	4-11/16"	150	110	170	75	50	95	100
2-3/8"	280	210	320	140	95	190	220	4-3/4"	150	110	170	75	50	95	95
2-7/16"	280	210	320	140	95	185	210	4-13/16"	130	100	150	65	45	90	95
2-1/2"	270	200	310	135	90	180	205	4-7/8"	130	100	150	65	45	90	90
2-9/16"	270	200	310	135	85	175	200	5"	130	100	150	65	45	90	90
2-5/8"	260	195	295	130	85	170	195	5-1/4"	120	90	135	60	40	85	85
2-11/16"	260	195	295	130	85	165	190	5-1/2"	120	90	135	60	40	85	85
2-3/4"	250	185	285	125	80	160	185	5-3/4"	110	80	125	55	35	75	75
2-13/16"	250	185	285	125	80	160	185	6"	110	80	125	55	35	75	75

MAINTENANCE

General

Periodic maintenance on your Model W1669 and W1670 Radial Drill Press will ensure its optimum performance. Make a habit of inspecting your drill press after each use.



⚠WARNING

NEVER adjust or service the machine while it is running. Wait until the machine is turned off, unplugged and all working parts have come to a stop before proceeding!

Check for the following conditions and repair or replace when necessary.

1. Loose or missing base mounting bolts.
2. Worn switch.
3. Worn or damaged cords and plugs.
4. Damaged drive belt.
5. Any other condition that could hamper the safe operation of this machine.

Table and Base

Keep the table and other unpainted surfaces rust-free with regular applications of products like Boeshield® T-9. For long term storage consider products like Kleen Bore's Rust Guardit™.

Lubrication

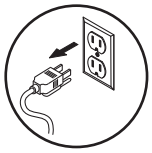
Since all bearings are shielded and permanently lubricated, simply leave them alone until they need to be replaced. **DO NOT** lubricate them.

For other items on this machine, such as the quill, table and column, horizontal and vertical columns, an occasional application of light machine oil is all that is necessary to maintain smooth rust-free operation.

Before applying any lubricant, clean off the old lubricant, and any sawdust or metal chips.

DO NOT over lubricate, your goal is to achieve adequate lubrication. Too much lubrication will attract dirt and sawdust, and various parts of your machine could loose freedom of movement.

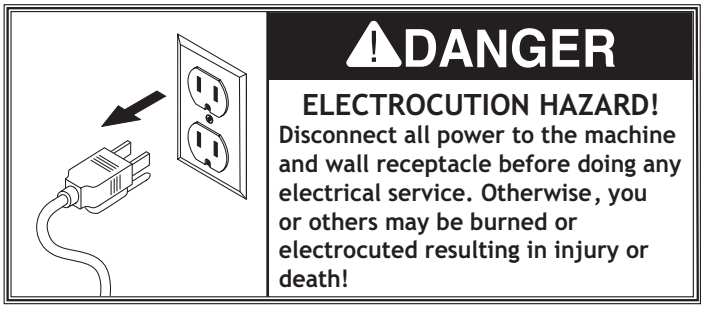
Troubleshooting



This section covers the most common symptoms and corrections with this type of machine. **WARNING! DO NOT make any adjustments until power is disconnected and moving parts have come to a complete stop!**

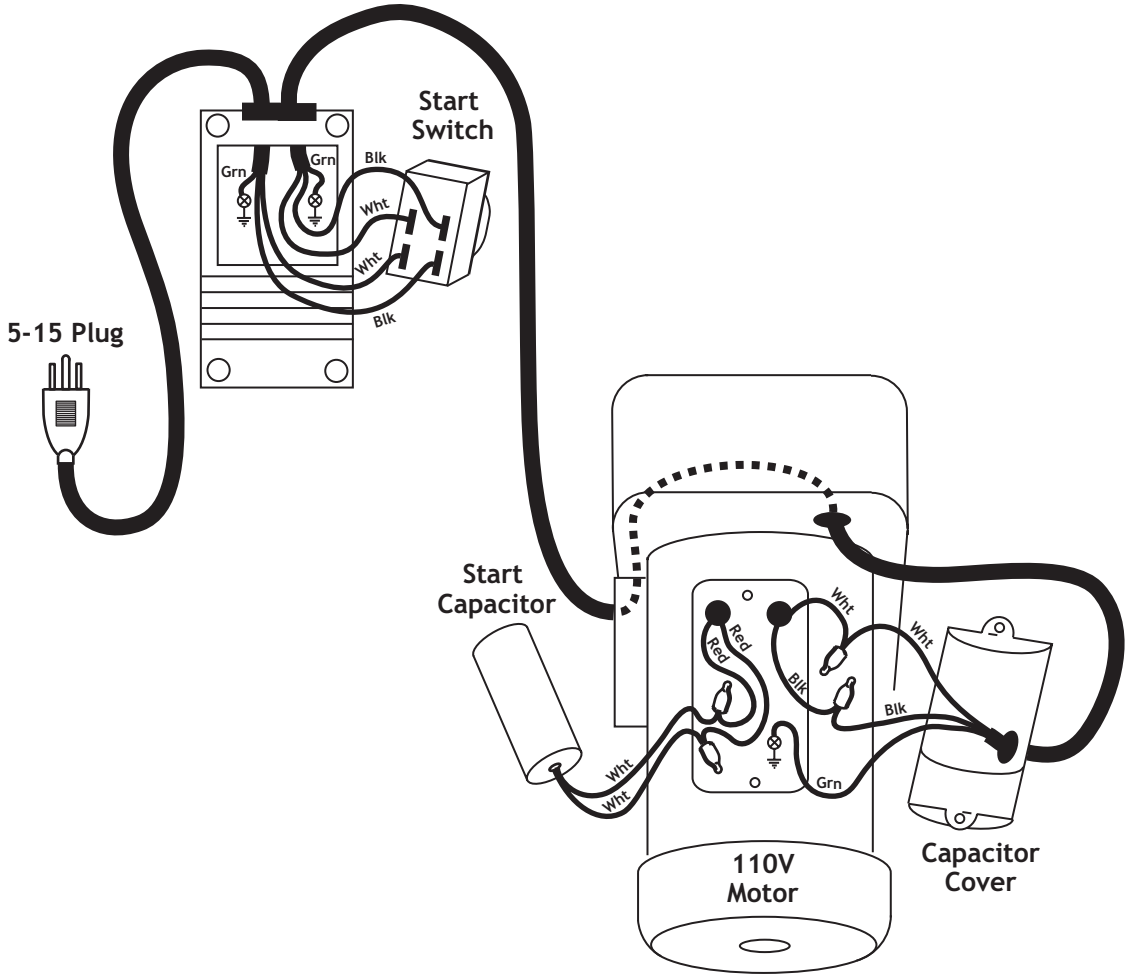
SYMPTOM	POSSIBLE REASON	HOW TO REMEDY
The drill press does not start.	1. The pulley cover is not closed.	1. Make sure there are no obstructions and close the pulley cover.
	2. The power supply circuit breaker is tripped.	2. Get a qualified electrician to troubleshoot and correct the cause for the circuit breaker or fuse trip.
	3. The power supply cord is damaged or has a poor connection.	3. Make sure all connections are good, and replace the power supply cord if damaged.
	4. The drill press power switch is at fault or is missing the yellow safety key.	4. Insert the safety key, and/or replace the power switch.
	5. The belt cover safety switch is at fault.	5. Replace the safety switch; do not repair it.
	6. The capacitor or motor is at fault.	6. Replace capacitor or motor.
Drilling stops, but the motor still operates.	1. The belt is loose or worn.	1. Replace and/or adjust the belt.
	2. The pulley for the spindle shaft or the motor is slipping on the shaft.	2. **To resecure the pulley, do these steps:** **a.** **UNPLUG THE DRILL PRESS.** **b.** Remove the setscrew on the slipping pulley. **c.** Align the flat spot on the pulley shaft with the setscrew hole. **d.** Reinstall and tighten the setscrew.
The chuck wobbles or is loose on the spindle shaft.	1. Foreign material is stuck between the chuck-to-spindle mating surface.	1. Remove the chuck and clean and de-burr the tapered chuck and spindle mating surfaces, then reassemble.
The spindle does not retract completely in the uppermost position or it binds.	1. The quill shaft is gummy with sawdust and oil.	1. Clean the gummy substance with penetrating oil and lubricate with a light coat of oil.
	2. The feed shaft return spring is weak.	2. Increase the feed shaft return spring tension.
	3. The quill deflection screw is binding the quill.	3. Loosen the jam nut, and slightly turn out the screw where the quill binds. Retighten the jam nut and recheck for binding and looseness at all spindle locations.
The quill has excessive deflection.	1. The quill shaft is at fault.	1. Adjust the quill screw as described on Page 16.
	2. The quill and/or bearings are worn.	2. Replace the quill and/or bearings.

W1669 and W1670 Drill Press 110V Wiring

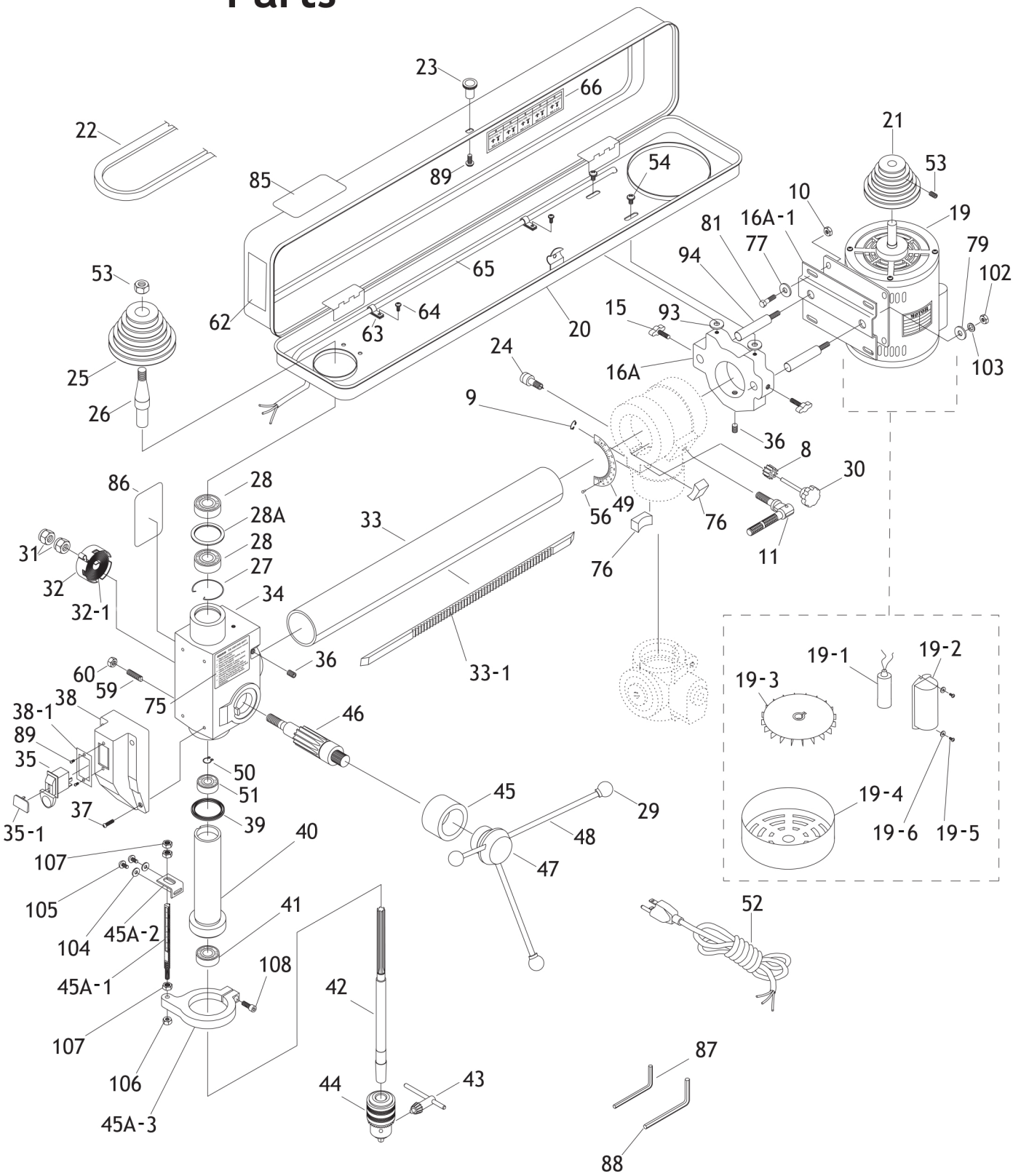


⚠DANGER

ELECTROCUTION HAZARD!
Disconnect all power to the machine and wall receptacle before doing any electrical service. Otherwise, you or others may be burned or electrocuted resulting in injury or death!



W1669 and W1670 Parts

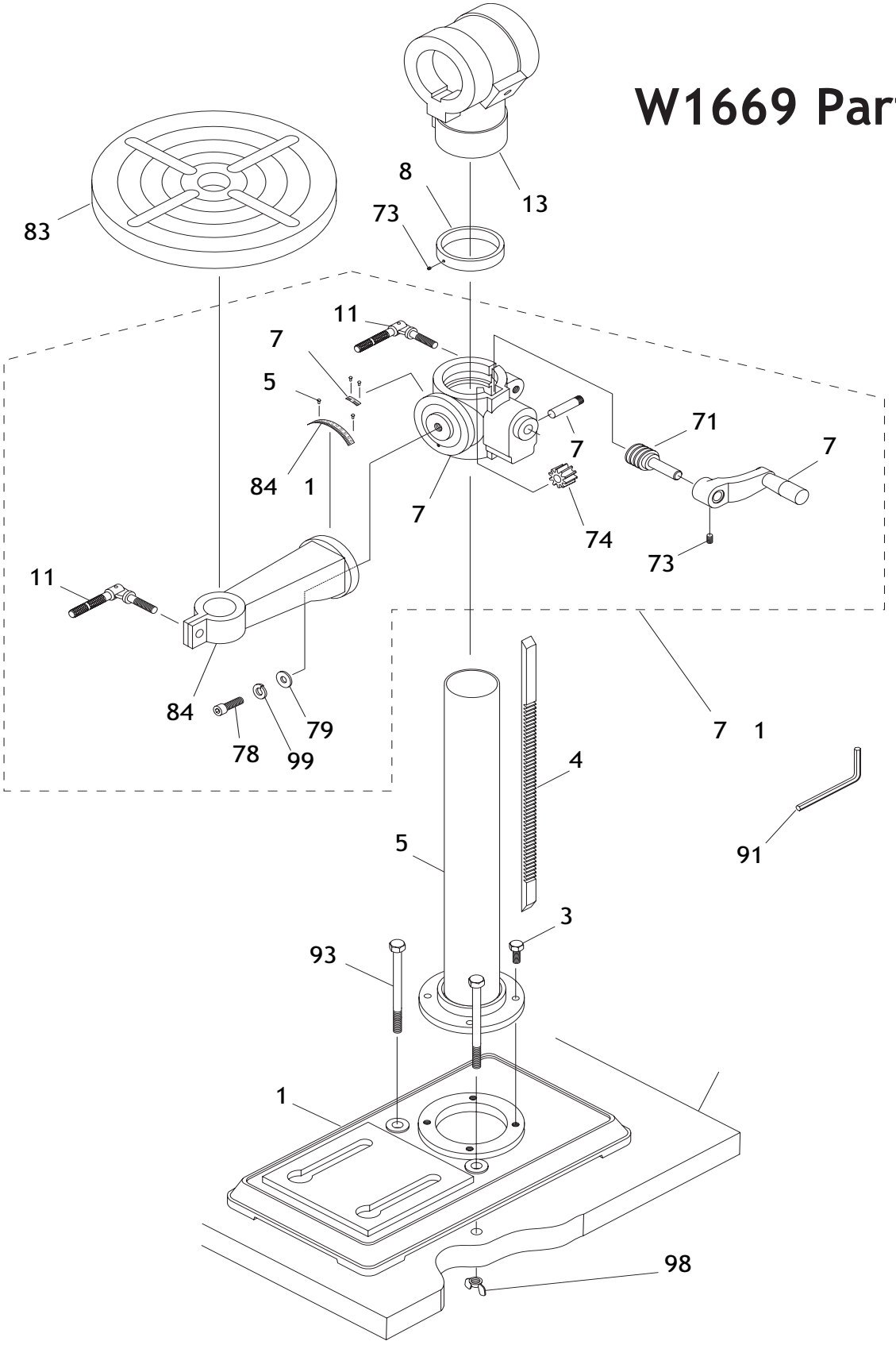


W1669, W1670 Parts List

REF	PART #	DESCRIPTION
8	X1669008	GEAR
9	XPR16M	EXT RETAINING RING 9MM
10	XPN03M	HEX NUT M8-1.25
11	X1668019	CLAMP BOLT M10-1.5 X 30
15	X1669015	KNOB BOLT M8-1.25 X 16
16A	X1669016A	MOUNT PLATE N/S
16A-1	X1669016A-1	MOTOR PLATE N/S
19	X1669019	MOTOR 1/2 HP, 110V
19-1	X1669019-1	S. CAPCTR 150MFD/125VAC
19-2	X1669019-2	CAPACITOR COVER
19-3	X1669019-3	MOTOR FAN
19-4	X1669019-4	FAN COVER
19-5	XPS54M	PHLP HD SCR M4-.75 X 6
19-6	XPW05M	FLAT WASHER 4MM
20	X1669020	PULLEY COVER
21	X1669021	MOTOR PULLEY
22	X1669022	V-BELT 0-1480
23	X1669023	UNTHREADED FEMALE KNOB
24	X1669024	LOCK PIN ASSEMBLY
25	X1669025	SPINDLE PULLEY
26	X1669026	DRIVE SLEEVE
27	XPR23M	INT RETAINING RING M40
28	XP6203	BEARING 6203
28A	X1669028A	SPACER
29	X1669029	KNOB
30	X1669030	LEVER
31	XPLN08	LOCK NUT 1/2"-20
32	X1669032	COVER WITH SPRING
32-1	X1669032	COVER WITH SPRING
33	X1669033	HORIZONTAL COLUMN
33-1	X1669033-1	HORIZONTAL COLUMN RACK
34	X1669034	HEADSTOCK
35	XPSW09	SWITCH AND KEY
35-1	XPSW09-1	SWITCH KEY
36	XPSS02	SET SCREW 5/16"-18 X 3/8"
37	XPS22	PHLP SCREW 10-24 X 5/8"
38	X1669038	SWITCH BOX
38-1	X1669038-1	SWITCH MOUNTING PLATE
39	X1669039	RUBBER WASHER
40	X1669040	QUILL SHAFT
41	XP6202	BEARING 6202
42	X1669042	SPINDLE JT#33

REF	PART #	DESCRIPTION
43	X1669043	CHUCK KEY
44	X1669044	1/2" CHUCK 1-16MM JT#33
45	X1668031	COLLAR
45A-1	X1668031A	DEPTH STOP ROD N/S
45A-2	X1669045A-2	DEPTH STOP ROD BRACKET
45A-3	X1668031A-6	DEPTH STOP MOUNT
46	X1668030	FEED SHAFT
47	X1668033	FEED COLLAR
48	X1669048	HANDLE
49	X1669049	DEGREE SCALE
50	XPR03M	EXT RETAINING RING 12M
51	XP6201	BEARING 6201
52	X1669052	POWER CORD
53	X1669053	SET SCREW
54	XPS07	PHLP SCREW 1/4"-20 X 3/8"
56	X1669056	RIVET
59	X1669059	SPECL SET SCR 5/16"-18 X 1"
60	XPN02	HEX NUT 5/16"-18
62	X1669062	LABEL
63	X1669063	WIRE STRAP
64	XPS06	PHLP SCREW 10-24 X 3/8"
65	X1669065	MOTOR SWITCH CORD
66	X1669066	SPEED CHART
75	X1669075	SAFETY LABEL
76	X1669076	LOCKING GIB
77	XPW01M	FLAT WASHER 8MM
79	XPW06M	FLAT WASHER 12MM
81	XPB09M	HEX BOLT M8-1.25 X 20
85	X1669085	SAFETY GOGGLES LABEL
86	X1669086	LONG HAIR SAFETY LABEL
87	XPAW03M	HEX WRENCH 3MM
88	XPAW05M	HEX WRENCH 5MM
89	XPHTEK7	SELF TAP SCREW #8 X 3/8"
93	X1669093	RUBBER WASHER 8MM
94	X1669094	GUIDE ROD 16 X 30MM
102	XPN02M	HEX NUT M10-1.5
103	XPLW06M	LOCK WASHER 10MM
104	XPW03M	FLAT WASHER 6MM
105	XPS68M	PHLP HD SCR M6-1 X 10
106	XPN03M	HEX NUT M8-1.25
107	XPN02M	HEX NUT M10-1.5
108	XPSB14M	CAP SCREW M8-1.25 X 20

W1669 Parts

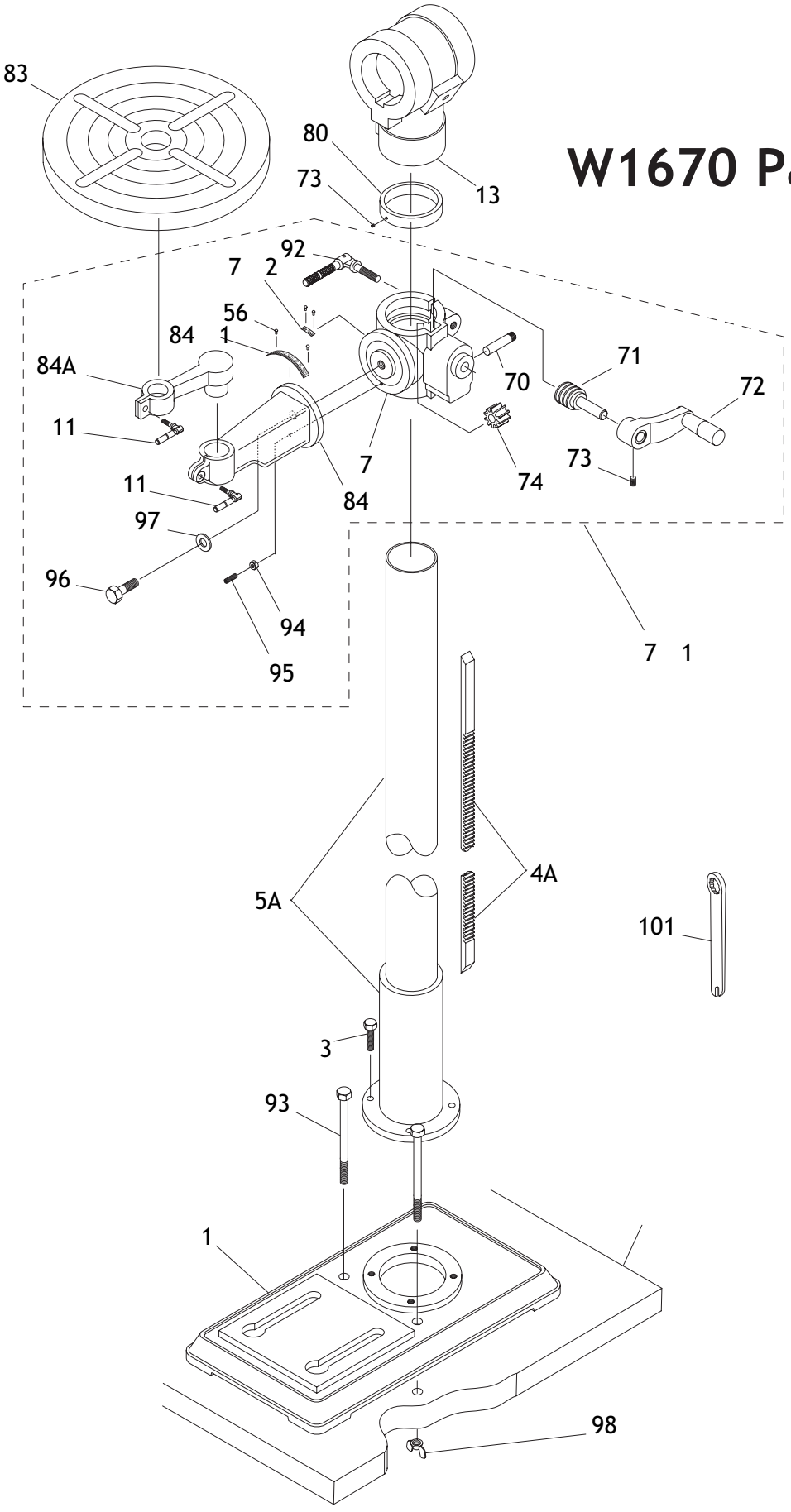


W1669 Parts List

REF	PART #	DESCRIPTION
1	X1669001	BASE
3	XPB09M	HEX BOLT M8-1.25 X 20
4	X1669004	W1669 RACK
5	X1669005	W1669 COLUMN
7	X1669007	GEARED TBL BRKT N/S
7-1	X1669007-1	COMPLETE TBL BRKT ASSY
7-2	X1669007-2	GEARED TBL BRKT SCALE
11	X1668019	LEVER BOLT M10-1.5 X 30
13	X1669013	HORR. COLUMN BRKT
54	XPS07	PHLP SCREW 1/4"-20 X 3/8"
56	X1669056	RIVET
70	X1669070	PIN
71	X1669071	WORM PINION

REF	PART #	DESCRIPTION
72	X1669072	LIFT HANDLE CRANK
73	XPSS01M	SET SCREW M6-1.0 X 10
74	X1669074	10T GEAR
78	XPSB77M	CAP SCREW M12-1.75 X 30
79	XPW06M	FLAT WASHER 12MM
80	X1669080	COLUMN RING
83	X1669083	TABLE
84	X1669084	COLUMN SUPPORT ARM N/S
84-1	X1669084-1	SCALE
91	XPAW10M	HEX WRENCH 10MM
93	X1670093	HEX BOLT M8-1.25 X 125
99	XPLW05M	LOCK WASHER 12MM
98	XPWN02M	WING NUT M8-1.25

W1670 Parts


83
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84A
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7 1
5A
4A
101
3
93
1
98

W1670 Parts List

REF	PART #	DESCRIPTION
1	X1670001	BASE
3	XPB31M	HEX BOLT M10-1.5 X 40
4A	X1670004A	W1670 RACK
5A	X1670005A	W1670 COLUMN
7	X1668010A	GEARED TBL BRKT N/S
7-1	X1668010A-2	COMPLETE TBL BRKT ASSY
7-2	X1669007-2	SCALE
11	X1668019	LEVER BOLT M10-1.5 X 30
13	X1670013	HORR. COLUMN BRKT
56	X1669056	RIVET
70	X1668010A-3	AXLE
71	X1668012	WORM PINION
72	X1668016	LIFT HANDLE
73	XPSS01M	SET SCREW M6-1.0 X 10

REF	PART #	DESCRIPTION
74	X1668015	WORM GEAR
80	X1668008	COLUMN RING
83	X1670083	TABLE
84	X1668010A-1	COLUMN SUPPORT ARM N/S
84-1	X1669084-1	SCALE
84A	X1670084A	TABLE SUPPORT ARM
92	X1668013	CLAMP BOLT M12-1.75 x 50
93	X1670093	HEX BOLT M8-1.25 X 125
94	XPN01M	HEX NUT M6-1.0
95	X1668111B	SPECIAL PIN
96	X1670096	HEX BOLT 5/8"-13 X 1 1/2"
97	XPW14	FLAT WASHER 5/8"
98	XPWN02M	WING NUT M8-1.25
101	X1668152	SPECIAL WRENCH

Accessories

The following drill press accessories may be available through your local Woodstock International Inc. Dealer. If you do not have a dealer in your area, these products are also available through online dealers. Please call or e-mail Woodstock International Inc. Customer Service to get a current listing of dealers at: 1-800 840-8420 or at sales@woodstockint.com.

Sanding Sleeves are sized to fit the D2677 Drum Sander Set. These hard Sanding Sleeves are available in 60, 80, 100, 120, and 150 grits. Keep plenty of these consumable Sanding Sleeves on hand.

Sanding Sleeves

Size (Dia. x Ht.)	60 Grit	80 Grit	100 Grit	120 Grit	150 Grit
1" X 4 1/4"	D2683	D2684	D2685	D2686	D2687
1 1/2" X 4 1/4"	D2688	D2689	D2690	D2691	D2692
2" X 4 1/4"	D2693	D2694	D2695	D2696	D2697

The **4" PRO-STIK®** Stick with Handle is the easiest solution for increasing the life of sanding sleeves by removing pitch and sawdust particles from the abrasive pores, which later harden in place if not removed. Simply press the cleaner lightly against the moving abrasive surface to remove clogged-up pitch and sawdust. **PRO-STIK®** cleaners are available in other sizes for any cleaning application that would need cleaners with handles, as blocks, or as flat pads. (Not recommended for wide-belt sanders.)

D2677 Drum Sander Set includes three rubber sanding drums 4 1/4" in length to accommodate 1", 1 1/2" and 2" diameter sanding sleeves. This kit also includes one 80 grit sleeve for each drum to get things started.

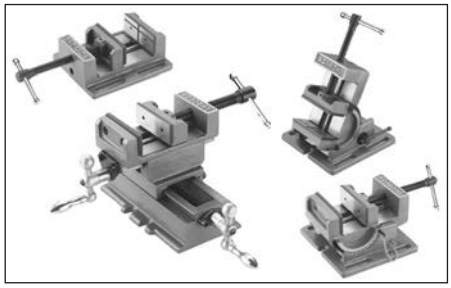
D2722 Mandrel is a 3/8" shank and is required to use with the Drum Sander Set with any drill press.

Drill Press Clamps adjust quickly and easily to lock your workpiece in any position. The clamping pad pivots to conform to any workpiece, ensuring uniform pressure.

W1301 6" Drill Press Clamp (1 1/2" Capacity)
D2192 10" Drill Press Clamp (3" Capacity)
D2493 12" Drill Press Clamp (5" Capacity)

SHOP FOX® Drill Press Vises use precision ground steel guide rods, smooth-action Acme threads, ground steel jaws, with fixed jaw V-grooves for holding round stock, and dovetailed ways where applicable.

D2727 **SHOP FOX®** (3" Basic Vise)
D2728 **SHOP FOX®** (4" Basic Vise)
D2729 **SHOP FOX®** (6" Basic Vise)
D2933 **SHOP FOX®** (3 3/4" Angle Vise)
D2730 **SHOP FOX®** (3" Cross Sliding Vise)
D2731 **SHOP FOX®** (4" Cross Sliding Vise)

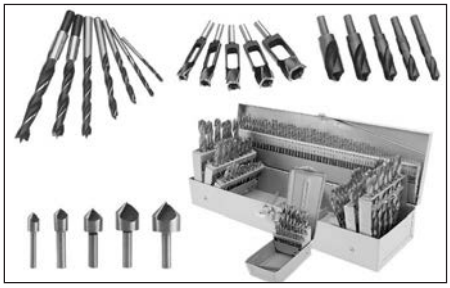


The SHOP FOX® D2056 Tool Table is great for bench-top tools like chop saws, drill presses, planers, scroll saws and bandsaws. Support cross braces on top provide incredible strength and capacity. Flared legs and adjustable rubber feet ensure stability and reduce machine vibration. Butcher block finish table top measures 13" x 23" and is 30 1/2" tall with a 700 lb. capacity.

D2251 Steelex® Adjustable Circle Cutter cuts flat-sided holes in wood from 1" to 5". Made of M-2 alloy steel, this Circle Cutter features a 3/8" hex shank, 5/16" drill, center point and hex wrench.

D3161 Steelex® Heavy-Duty Carbide-Tipped Adjustable Circle Cutter is Carbide Tipped and cuts 1 3/4" to 5 3/4" diameter holes in the toughest material. For use with 1/2" drill press chucks. Includes hex wrench and 7/16" pilot drill.

Woodstock offers a full line of Brad Point Bits,Tenon/Plug Cutters, Countersink Bits, and Stubby Drill Bits to satisfy every need. Whether for do-it-yourselfers or professional woodworkers, you can depend on Woodstock International Inc. to manufacture a useful selection of drilling and cutting tools. Refer to **http://www.woodstockint.com/drilling.cfm** for a complete product line available through your dealer.



Steelex® Carded Forstner Bits stack up as some of the best bits in the world. In fact, an independent testing lab proved that the Steelex® brand cut was equal to or better than Forstner Bits from Austria, known for being the best. For use with drill presses. Refer to **http://www.woodstockint.com/forstner.cfm** for a complete product line available through your dealer.

Steelex Plus® Bi-Metal Hole Saws stay sharper longer than carbon steel hole saws. Equipped with high-speed steel alloy cutting teeth bonded to a welded steel body, they cut wood, metal and plastics with ease.

D2784 10-pc. Bimetal Hole Saw Set
D2020 8-pc. Aggressive Hole Saw Set
D2783 6-pc. Bimetal Hole Saw Set
D2797 1/2" X 20 UNF Hole Saw Arbor
D2798 5/8" X 18 UNF Hole Saw Arbor
D2799 12" Hole-Saw Arbor Extension
D2928 Replacement Pilot Drill for D2797
D2929 Replacement Pilot Drill for D2798

Notes

Notes

Warranty

Woodstock International, Inc. warrants all **SHOP FOX**® machinery to be free of defects from workmanship and materials for a period of two years from the date of original purchase by the original owner. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, lack of maintenance, or reimbursement of third party expenses incurred.

Woodstock International, Inc. will repair or replace, at its expense and at its option, the **SHOP FOX**® machine or machine part which in normal use has proven to be defective, provided that the original owner returns the product prepaid to the **SHOP FOX**® factory service center or authorized repair facility designated by our Bellingham, WA office, with proof of their purchase of the product within two years, and provides Woodstock International, Inc. reasonable opportunity to verify the alleged defect through inspection. If it is determined there is no defect, or that the defect resulted from causes not within the scope of Woodstock International Inc.'s warranty, then the original owner must bear the cost of storing and returning the product.

This is Woodstock International, Inc.'s sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant that **SHOP FOX**® machinery complies with the provisions of any law or acts. In no event shall Woodstock International, Inc.'s liability under this warranty exceed the purchase price paid for the product, and any legal actions brought against Woodstock International, Inc. shall be tried in the State of Washington, County of Whatcom. We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special or consequential damages arising from the use of our products.

Every effort has been made to ensure that all **SHOP FOX**® machinery meets high quality and durability standards. We reserve the right to change specifications at any time because of our commitment to continuously improve the quality of our products.

Warranty Registration

Name_____

Street _____

City _____ State_____ Zip_____

Phone #_____ E-mail_____ Invoice #_____

Model #_____Serial #_____Dealer Name_____Purchase Date_____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. ***Of course, all information is strictly confidential.***

1. How did you learn about us?

_____ Advertisement _____ Friend ____ Local Store
_____ Mail Order Catalog _____ Website ____ Other:

2. How long have you been a woodworker/metalworker?

_____ 0-2 Years _____ 2-8 Years ____ 8-20 Years _____ 20+ Years

3. How many of your machines or tools are **Shop Fox®**?

_____ 0-2 _____ 3-5 ____ 6-9 _____ 10+

4. Do you think your machine represents a good value? _____ Yes ____ No

5. Would you recommend **Shop Fox®** products to a friend? _____ Yes ____ No

6. What is your age group?

_____ 20-29 _____ 30-39 ____ 40-49
_____ 50-59 _____ 60-69 ____ 70+

7. What is your annual household income?

_____ $20,000-$29,000 _____ $30,000-$39,000 ____ $40,000-$49,000
_____ $50,000-$59,000 _____ $60,000-$69,000 ____ $70,000+

8. Which of the following magazines do you subscribe to?

____ Cabinet Maker
____ Family Handyman
____ Hand Loader
____ Handy
____ Home Shop Machinist
____ Journal of Light Cont.
____ Live Steam
____ Model Airplane News
____ Modeltec
____ Old House Journal
____ Popular Mechanics
____ Popular Science
____ Popular Woodworking
____ Practical Homeowner
____ Precision Shooter
____ Projects in Metal
____ RC Modeler
____ Rifle
____ Shop Notes
____ Shotgun News
____ Today's Homeowner
____ Wood
____ Wooden Boat
____ Woodshop News
____ Woodsmith
____ Woodwork
____ Woodworker West
____ Woodworker's Journal
____ Other:

9. Comments:_____

_____

_____

_____

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BELLINGHAM, WA 98227-2309

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